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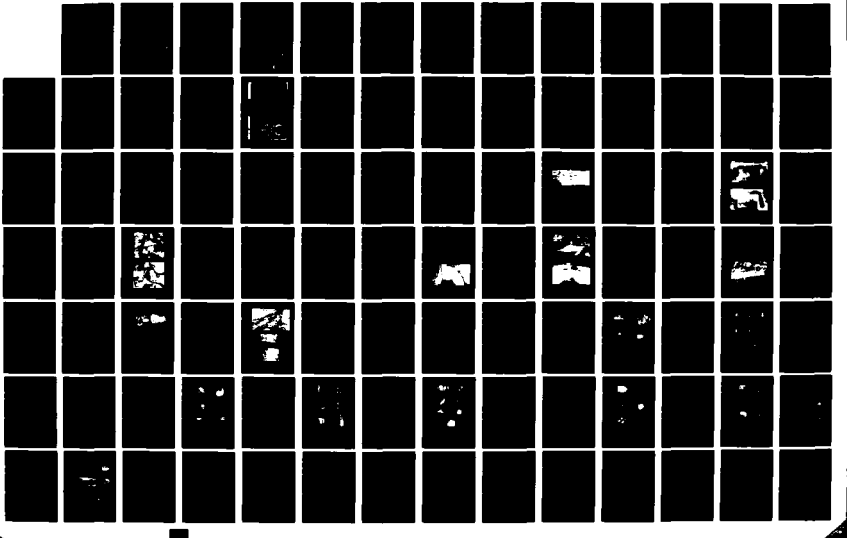

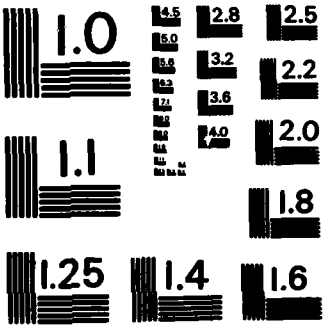

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REPORT PD-RC-82-05

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TEST EXCAVATIONS AT THE CEDAR GROVE SITE (3LA97): A LATE CADDO FARMSTEAD ON THE RED RIVER

by
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SEPTEMBER 1982
FINAL REPORT

Prepared for
DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. Box 60267
New Orleans, Louisiana 70160

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. PD-RC-82-05	2.	3. Recipient's Accession No.

4. Title and Subtitle
TEST EXCAVATIONS AT THE CEDAR GROVE SITE (3LA97):
A LATE CADDO FARMSTEAD ON THE RED RIVER

5. Report Date September 1982
Date of Issue

6.

7. Author(s) Frank F. Schambach, Neal L. Trubowitz, Frank Rackerby, E. Thomas Hemmings, W. Fredrick Limp, and John E. Miller III

8. Performing Organization Rept. No. 408

9. Performing Organization Name and Address
Arkansas Archeological Survey
P. O. Box 1249
Fayetteville, Arkansas 72702-1249

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C) DACW29-80-M-1870
(G)

12. Sponsoring Organization Name and Address
Department of the Army
New Orleans District, Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

13. Type of Report & Period Covered
Final Report

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

During June 1980 the Arkansas Archeological Survey conducted tests of site 3LA97 (the Cedar Grove site) under Contract DACW29-80-M-1870 with the New Orleans District, U.S. Army Corps of Engineers. The test excavation isolated two historic components and two Caddo components and established the significance of the Caddo V (A.D. 1700-1800) component.

Site 3LA97 was occupied mainly during Caddo V times, the least studied, least known period in Caddo archeology, and a period completely unknown in the Caddo area of Arkansas. It is recommended that further research be directed toward the full range of archeological problems, from the most basic one of archeological unit definition and precise chronological placement, to environmental questions of man-land relations, and to the specific research questions that arise with the discovery of a unique and long sought site on the threshold between prehistory and history.

17. Document Analysis a. Descriptors
Archeology

b. Identifiers/Open-Ended Terms
Great Bend Region Arkansas, Caddo - Historic Euramerican, Testing for Significance

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
"Release Unlimited"	Unclassified	126
	20. Security Class (This Page) Unclassified	22. Price

(See ANSI-Z39.18) See Instructions on Reverse

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

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ACKNOWLEDGMENTS

We appreciate the support of Mr. Thomas M. Ryan and Ms. Carroll Kleinhans, archeologists for the U.S. Army Corps of Engineers, New Orleans District. Through their efforts, funds for these investigations were provided by the U.S. Army Corps of Engineers. The assistance of Mr. Jerry Thomas, Dr. Doyle Chandler, Mr. Doyle Mothershed, and other Corps of Engineers employees working on the Field Revetment project is acknowledged.

Permission to excavate the Cedar Grove site was granted by Mr. W. H. Triplett of Lewisville, Arkansas. Mr. John Upton, representative of the Red River Levee District also was helpful in making local arrangements.

Chapter 1

INTRODUCTION

by Frank Rackerby

On April 16, 1980, dragline operations on the Field Revetment construction project, located on the right ascending bank of the Red River about 10 km south of Garland, Arkansas, exposed the tombstones of a historic cemetery buried under 1.2 m of alluvium. Lafayette County Sheriff Wade Tatum investigated the find and notified the U.S. Army Corps of Engineers project engineer, Jerry Thomas, and construction work was halted.

At this time the Arkansas Archeological Survey, under contract with the New Orleans District of the U.S. Army Corps of Engineers, was conducting archeological surveys on other proposed revetment projects along the Red River. (The Field Revetment was not a project surveyed by the Arkansas Archeological Survey.) Our field archeologist, Sandra Blaylock, learned of the historic cemetery from Jerry Thomas. After confirming the report of the buried tombstones, Blaylock contacted Frank Schambach at the Arkansas Archeological Survey station at Magnolia. They visited the site on April 24 and Schambach discovered that the historic cemetery had been established in a prehistoric site containing ceramics of the Caddo V period (A.D. 1700-1800). The site was given the number 3LA97 and the name Cedar Grove.

Thomas M. Ryan of the U.S. Army Corps of Engineers, New Orleans District and

Hester A. Davis, Arkansas State Archeologist, were notified and they discussed various approaches to handling this cultural resource management situation.

Construction work at the site was suspended under the authority of the U.S. Army Corps of Engineers regulations for civil work projects (Title 33, Part 305.13/B/ Identification and Administration of Cultural Resources). The New Orleans District requested that the Arkansas Archeological Survey assist in delimiting the site.

Corps of Engineers archeologist, Carroll Kleinhans, and John E. Miller of the Arkansas Archeological Survey staff at Magnolia visited Cedar Grove on April 28 and 29, 1980 to try to ascertain its limits. Bulldozer trenches were cut both perpendicular and parallel to the riverbank exposing buried midden deposits in several areas. The Corps of Engineers then invited the Arkansas Archeological Survey to prepare a proposal for test excavations.

On May 13 Kleinhans met at the site with Frank Rackerby, James Toney, E. Thomas Hemmings, Frank Schambach, and John Miller of the Arkansas Archeological Survey to discuss test excavation strategies. Following this conference the Arkansas Archeological Survey began to develop a proposal to test the site. This was submitted to the Corps of Engineers on June 2, 1980, and a purchase order was initiated. The purchase order and the Survey's formal proposal for the fieldwork were received in each respective office on June 16. Fieldwork directed by Neal Trubowitz began on June 18 and concluded on June 25, 1980.

On June 27, analysis and report writing began. Schambach analyzed the ceramics in his laboratory at Magnolia and wrote his chapters there. Trubowitz worked with the field notes, collections, maps, and profile drawings in Fayetteville. Hemmings consulted with Rackerby and Trubowitz several times during early July on problems of site location and physiographic setting. On July 17 Schambach traveled to Fayetteville and during the subsequent 48 hours collaborated with the other report authors in producing this report, as required under terms of Purchase Order DACW29-80-M-1870.

Chapter 2

THE ARCHEOLOGICAL BACKGROUND

by Frank F. Schambach

The archeology of the Great Bend region has been reviewed many times in recent years (Hoffman 1970, 1971; Hester A. Davis 1970; Webb and Gregory 1978; Schambach 1979; Hemmings 1981). The occupations at the Cedar Grove site fall within the Caddo IV and Caddo V periods, so only those periods need to be reviewed here.

THE CADDO IV PERIOD

The Caddo IV period (A.D. 1500-1700) marks the end of the uninterrupted development of Caddo culture. Sporadic European contact with the Indians began during this period, starting with De Soto's push into the Caddo country in 1542. The cultural effects of these early European contacts probably were not great in the sense that few European goods found their way into Indian hands or significantly altered Indian lifeways. The biological effects may have been more profound, however. It is probable that the Indians were afflicted with European diseases following contact with De Soto's army, and it is probable that as European contacts increased, and became prolonged towards the end of this period, these diseases began to take hold and spread, and Indian populations began their precipitous decline.

This period is represented by two contemporaneous phases in the Great Bend region: the Texarkana phase and the Belcher phase. Texarkana phase sites appear to be limited to the upper Great Bend subregion, that stretch of the Red River Valley from Fulton, Arkansas west to Texarkana and out into Bowie County, Texas. Most of the known Texarkana phase sites are clustered north and northwest of Texarkana. The limit of their distribution eastward towards Fulton, Arkansas is unknown. The type sites for this phase are Hatchel, Mitchell, and Moores, a cluster of small sites located within a few miles of each other in Bowie County, northwest of Texarkana. Its major pottery types are the fine ware types Avery Engraved, Barkman Engraved, and Simms Engraved, and the coarse ware types Nash Neck Banded and McKinney Plain. Shell temper is reported to be a minor attribute in Texarkana phase ceramics. Red "filming" or red slipping is a major and very distinctive attribute of this phase (Krieger 1946:Figure 18; E. Mott Davis 1970:50-51).

Belcher phase sites are found in the lower Great Bend subregion, that stretch of the Red River Valley from Fulton, Arkansas south to Shreveport, Louisiana. The type site for this phase is the Belcher Mound (Webb 1959) located just north of Shreveport. The major Belcher phase pottery types are the fine ware types Belcher Engraved, Hodges Engraved, and Glassell Engraved and the coarse ware types Foster Trailed-Incised, Belcher Ridged, and Karnack Brushed-Incised (Webb 1959:153).

The Belcher phase is strongly represented in the vicinity of the Cedar Grove site. There are Belcher phase components at most of the mound groups that we know anything about in the Red River Valley in Arkansas between Fulton, Arkansas and the Arkansas state line. These include Crenshaw (3MI6); Moore (3MI30); Foster (3LA27), possibly the major Belcher phase site in Arkansas (Moore 1912:591-619; Webb 1945); Friday (3LA28); McClure (3MI29); and Battle (3LA1), the latter less than 5 km north of Cedar Grove. There are probably hundreds of Belcher phase farmsteads in this locality but only a few have been identified, such as the Cox site (3LA18) about 16 km north of Cedar Grove, and Spirit Lake (3LA83) and Gum Point (3LA87), both about 8 km north of Cedar Grove (Figure 1).

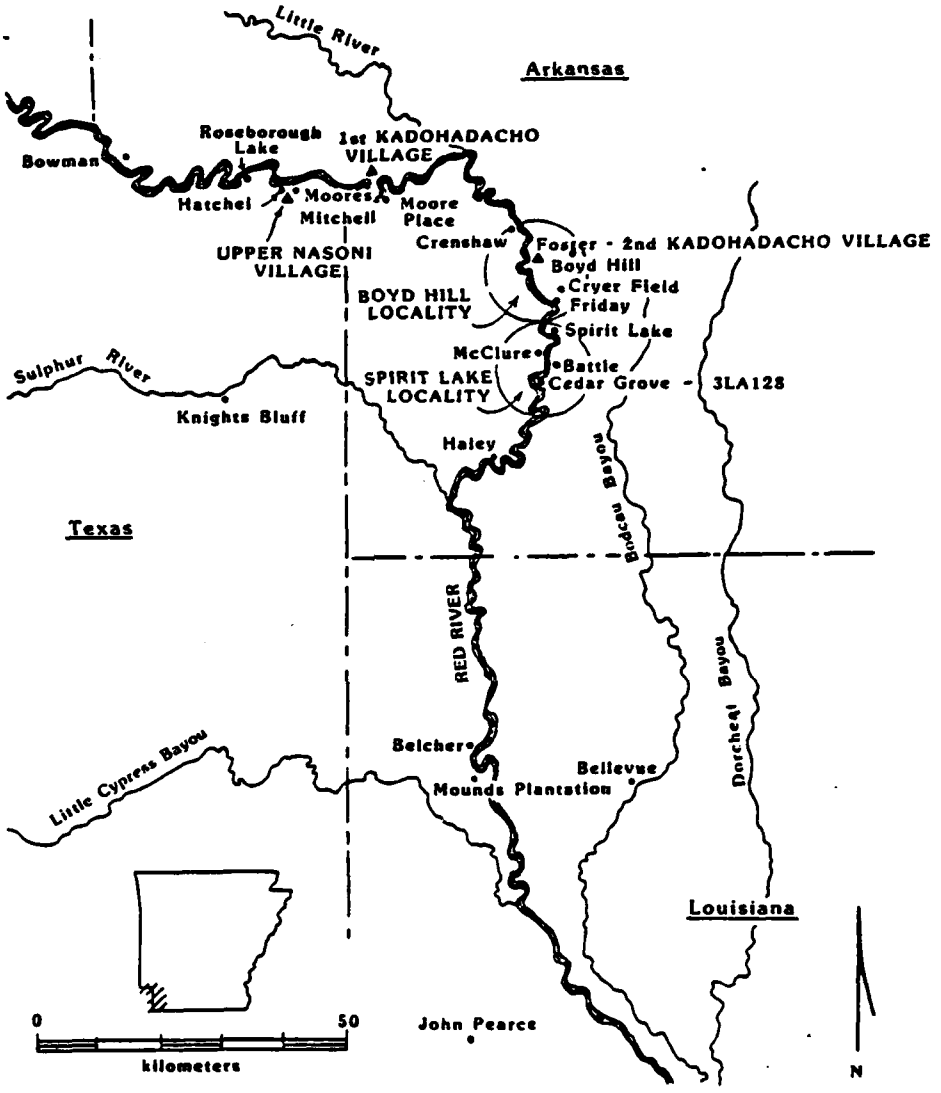


Figure 1. General location of the Cedar Grove site (3LA97)

There are no chronometric dates on the Texarkana phase. Radiocarbon dates of A.D. 1345, A.D. 1630, A.D. 1670 and A.D. 1750 on the Belcher phase occupations at the Belcher site (Webb 1959:207; Hoffman 1971:838) indicate a seventeenth century placement for it. We have just obtained a corroborative date of A.D. 1660 + 115 (Geochron-6745) on the Cox site (3LA18).

THE CADDO V PERIOD

The Caddo V period (A.D. 1700-1800) was one of increasing European contact with the Caddo, and of steady decline of Indian populations due to European diseases and raids by the Osage (Williams 1964:555). There was no fighting with Europeans. In this period Caddo culture, particularly the social organization, began to crack and gradually fall apart. As populations declined, villages were abandoned and traditional boundaries seem to have broken down. Survivors traveled extensively, seeking alliances with other remnant groups (Williams 1964). Oddly enough, Caddo material culture, particularly ceramics, does not seem to have declined apace with the rest of Caddo culture. If anything, Caddo pottery making reached a peak during this period, in types like Natchitoches Engraved and Keno Trailed, which include some of the most beautiful and technically excellent vessels the Caddo ever made.

Between 1788 and 1790 following some severe raids by the Osage, the Caddo left the Great Bend region in Arkansas and moved south to Louisiana. When the Freeman-Custis expedition reached southwest Arkansas in 1806 the remains of three Caddo villages were seen and located on the expedition map prepared by Nicholas King. Kadohadacho guides with the expedition identified the first two villages as those of the Kadohadacho, one of the most important Caddo tribes. The third village was identified as that of the Nasoni who were a related tribe, part of the Kadohadacho confederacy in historic times (Williams 1964:553-554, Figure 2).

The lowermost of the Kadohadacho villages, the one on the southern reach of the Red River between Fulton, Arkansas and the Arkansas-Louisiana line is of interest here because of its possible connection with the Cedar Grove site. It was, according to the Kadohadacho guides, "the largest of their villages" and "their cultivated fields

extended for five to six miles (8-10 km) from it in every direction" (Swanton 1942:79; Webb 1945:78). The documentary evidence would put this village or a portion of it on a prairie in front of Boyd Hill, a geological oddity in this locality that is accurately described in the expedition journal (Webb 1945:79). This puts it about 21 km as the crow flies, upriver from the Cedar Grove site (Figure 1). Bearing in mind that Caddo villages were dispersed over the countryside (Wedel 1978:Figure 2), the Cedar Grove site is close enough to the Boyd Hill locality to have been part of the same dispersed farmstead complex observed by the Freeman-Custis expedition. It may have been closer than that. We shall return to this problem shortly, to examine some archeological evidence that the main body of the village may have been farther downriver and closer to Cedar Grove.

Archeologically, the Caddo V period--this is the equivalent of Krieger's old "Glendora focus" (Krieger 1946)--is the least known, least studied period in Caddo prehistory, particularly in the eastern half of the Caddo area. The few reports that we have are little more than descriptions of Caddo V graves found at sites that are now gone or badly damaged (Moore 1909, 1912; Webb 1945; Krieger 1946; E. Mott Davis 1970:56; Hoffman 1970; Wyckoff 1970; Miroir et al. 1973).

Prior to the discovery of the Cedar Grove site, the only known or suspected sites of the Caddo V period in the Great Bend region were the Rosebrough Lake site (41BW5; Miroir et al. 1973) and a nearby cluster of sites called the Hatchel-Mitchell-Moores complex that includes the Hatchel mound and cemetery (41BW3), the Mitchell site (41BW4), the Eli Moores site (41BW7), the Hargrove Moores site (41BW2) and the Tillson site (41BW14) (Krieger 1946:211; Wedel 1978:8, Figure 3; E. Mott Davis 1970:50).

The Rosebrough Lake site (Figure 2) has produced abundant eighteenth century European artifacts. It is thought to be primarily the site of an eighteenth century French trading post and a small garrison. There is also evidence of a Caddo V aboriginal occupation in two midden areas. European and Indian artifacts were found in direct association in two graves that contained glass trade beads, pottery vessels of the diagnostic panregional Caddo V marker type Natchitoches Engraved, and vessels of several older, Caddo IV period Texarkana phase types that evidently carry over into

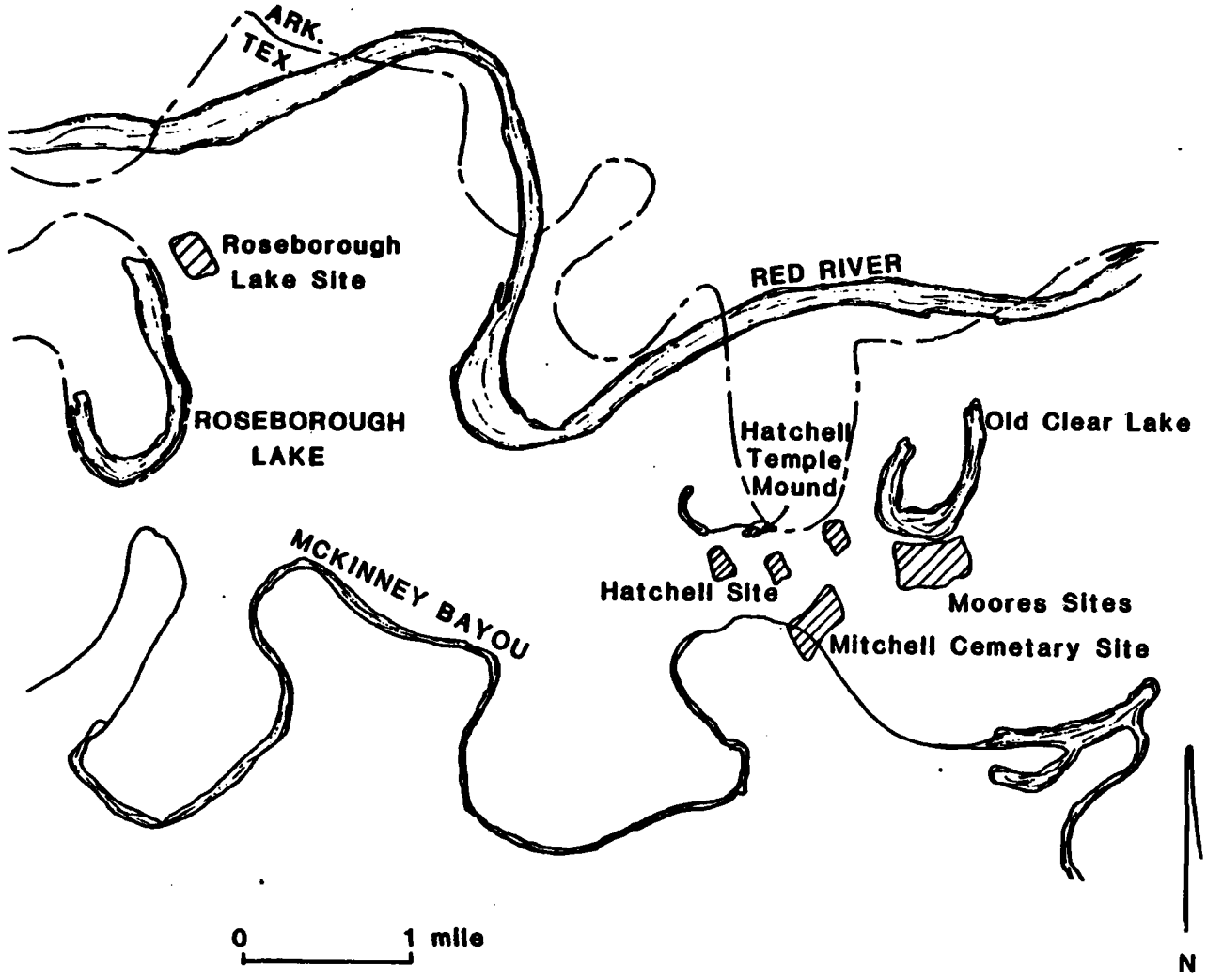


Figure 2. Archeological sites in the Red River in Texas

the Caddo V period (Miroir et al. 1973). Unfortunately for Caddo V archeology, this site has been damaged by sheet erosion in the past and recently it has been chisel plowed and also heavily damaged by pothunters.

One site in the Hatchel-Mitchell-Moores complex, the Eli Moores site, is reported to have produced trade beads (Wedel 1978:8). Sherds of the Caddo V marker type Natchitoches Engraved and Keno Trailed have been found in a refuse mantle on the Hatchel Mound. This mound was evidently begun in Caddo IV times, if not earlier, and continued in use in the Caddo V period (E. Mott Davis 1970:50). The possibility that the remaining sites are Caddo V rests on Mildred Wedel's argument that these sites, all of them small, may be the remains of the farmsteads or other types of compounds in the dispersed Upper Nasoni village illustrated in the Teran map of 1691-1692 (Figure 3). Unfortunately--again--there may be little evidence left at these sites to test this hypothesis. The Hatchel site has recently been land leveled. Prior to that it was so extensively looted that relic hunters now joke that the ground there drains water faster than any other piece of land in the Red River Valley because of all the probing rod holes. The other sites are also being looted.

Of the two Kadohadacho villages observed by the Freeman-Custis expedition, no trace of the northernmost, or "Kadohadacho 1" village (Williams 1964:Figure 1) west of Fulton, has ever been found, even though we have been alert for any evidence of it since the formulation of the Arkansas Archeological Survey in 1968, and others have searched for it previously.

Webb (1945:79) has suggested that C. B. Moore's (1912:599-619) Foster site was the "Kadohadacho 2" village described in the Freeman-Custis report, because of its proximity to Boyd Hill. It is within 3 km of Boyd Hill, about where it should be to jibe with the Freeman-Custis description, but it is a pure Belcher phase, Caddo IV component, making it aobut 100 years too early. In any case, the two small mounds Moore described have been washed into the river or destroyed by levee construction and there is little, if anything, left of the site.

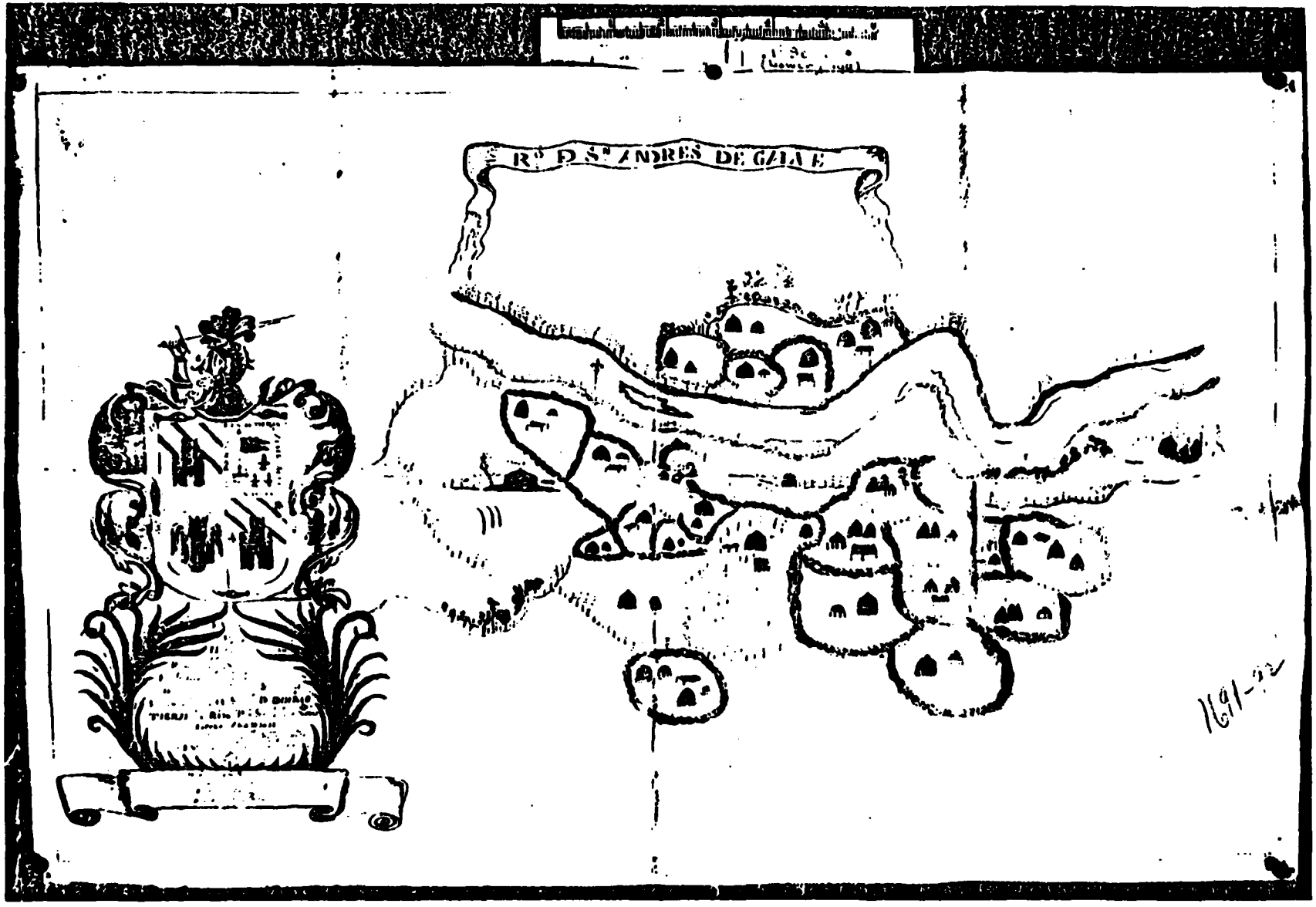


Figure 3. The Teran map (original map in Archivo General de Indias, Seville)

But that is not the end of this matter. Since all of the historical and archeological evidence indicates that Caddo settlements were of the dispersed farmstead type, Caddo V remains should not be restricted to the Foster site. If the Kadohadacho 2 village was here, there should be not one but many small Caddo V sites scattered around on the floodplain in the Boyd Hill locality, i.e., the stretch of the valley 7 to 8 km up and downriver from Boyd Hill itself (Figure 1). This does not seem to be the case. The Boyd Hill locality happens to be the most intensely surveyed locality in the Great Bend region in Arkansas at the moment (Schambach 1979) and the fact is that we have no Caddo V sites here that could be linked with this village.

It is still possible that such sites exist and have not been found, or most of them may have been silted over or washed into the river. But before accepting this, let us examine some archeological evidence suggesting that many, if not most, units or compounds of this dispersed Kadohadacho village were actually located on a stretch of the river 10 to 20 km further downstream that the Freeman-Custis records seem to indicate. This portion of the valley (we will call it the Spirit Lake locality) extends from present day Garland City south about 10 km to Lester Bend where the Cedar Grove site is located (Figure 1).

Our attention is drawn to the Spirit Lake locality because in the last 70 years much very late Caddo pottery has washed out of graves and middens scattered along both sides of the river. A significant sample of this pottery, roughly 200 whole vessels, has made its way into the Harry J. Lemley collection now at the Gilcrease Institute, and has been photographed by the Arkansas Archeological Survey. Additional vessels in local private collections have also been photographed by the Survey. There are also certain late vessels in the Clarence B. Moore collection (1912) from sites in this locality that have been overlooked in the past, but take on new significance when viewed along with the unpublished material.

Belcher phase types predominate in these collections, as would be expected in a Kadohadacho assemblage (Webb 1959:2). The Caddo V diagnostics Keno Trailed and Natchitoches Engraved are also present in significant quantities. These seem to make up between 10% and 20% of the fine wares. Percentages aside, we have the fact that this is the only locality where these types are known to occur in the Great Bend region in Arkansas.

For a variety of reasons, none of the sites that produced this pottery have been relocated in the field except, of course, Cedar Grove. In most cases this is probably because they were small farmstead sites that were completely taken away by the river within a few years after pots began to wash out. But the general locations of some of them have been ascertained using the Lemley collection records and old landownership records. These data strongly suggest that most of this pottery was coming from a single late village (we will call it the Spirit Lake complex) consisting of scattered farmsteads and other types of compounds, that extended from slightly north of Garland City south to Lester Bend (Figure 1).

The northernmost compounds in this village may have been at the Friday site (now destroyed by the Red River) where Moore found Keno Trailed vessels (1912:Figure 80). There were definitely several compounds on the adjoining C. M. Shaw and Joe Russell properties at Garland City, where many late vessels have been found, including the types Natchitoches Engraved and Keno Trailed. There was at least one compound in the vicinity of the Spirit Lake site (3LA83; now destroyed) that produced Natchitoches Engraved bowls and bottles (Figure 4). There were probably some compounds near Spirit Lake itself since several late vessels in the Lemley collection are attributed to that location. The two low refuse mounds that Moore dug at the McClure place (both now destroyed by the Red River) produced Keno Trailed pottery (Moore 1912:577-681) and were probably part of this complex. So too, was the "low rise" near the Battle Mound where Moore (1912:566-573) stumbled upon five graves with pottery that is uncharacteristically late for the Battle site, including, again, Keno Trailed and a possible variant of Natchitoches Engraved (see Moore 1912:Figures 61, 62, 63, and 64). There are six late vessels in the Lemley collection from a site somewhere on the Rube Russell property, located between Battle Mound and the Red River, that must have been yet another compound in the Spirit Lake complex.

Finally there is a collection of 118 whole vessels in the Lemley collection from the old Sentell and Lester Brothers plantations (3LA38) on Lester Bend itself (Table 1). This pottery was reportedly collected from the riverbanks as graves washed out on both sides of the river. Considering the collection technique, the vessels in the

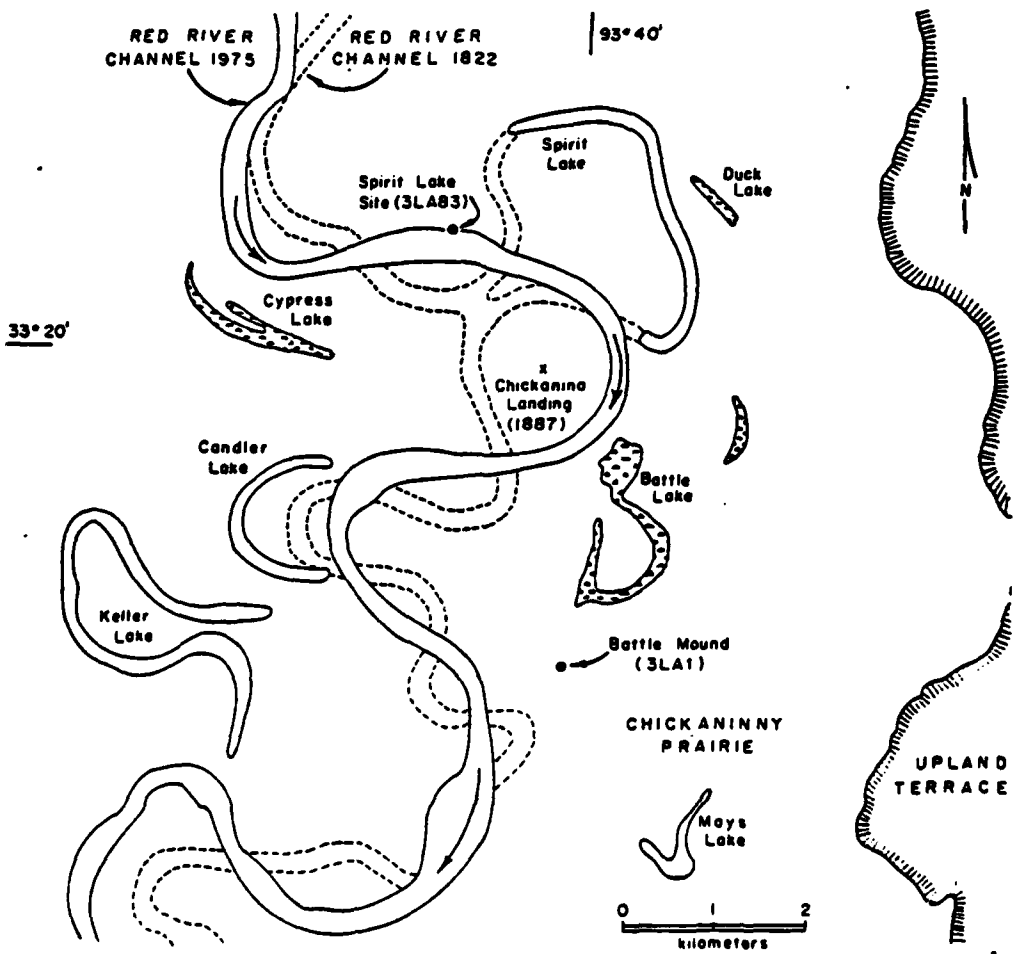


Figure 4. Archeological sites in the Spirit Lake locality

Table 1. Whole vessels in the Lemley collection from Lester Bend

FINE WARE	Bottle	Bowl	Beaker	Jar	Effigy
Avery Engraved		6			
Belcher Engraved	11	11			
Keno Trailed	8			1	
Glassell Engraved		4			
Hodges Engraved	7		1		
Natchitoches Engraved		9			
Taylor Engraved	2				
Haley Engraved	2				
Untyped Engraved		4	6		4
Untyped Plain	2	1		2	
Untyped Punctated Incised	1		1	1	
COARSE WARE					
Karnack Brushed				2	
Belcher Ridged				5	
Cass Applique				3	
Foster Trailed-Incised				19	
Cowhide Stamped				2	
Untyped Coarse Ware				3	

Lemley collection must represent a parent population of many hundreds and it seems clear that there was a major concentration of compounds around Lester Bend. Our Cedar Grove ceramic collection matches the Lemley collection particularly type for type, demonstrating that the Cedar Grove site was part of the concentration of Spirit Lake complex sites at Lester Bend.

Why is there a discrepancy of some 10-23 km between the historically documented location of the Kadohadacho 2 village and the Spirit Lake complex, the only known sites in the area late enough to have been part of that village? Several possible explanations come to mind. One, already mentioned, is that there were some Caddo V sites in the Boyd Hill locality that are now gone, or they are there but have not been located yet. In either case it is difficult to imagine why no trace of them has ever been found when evidence of the Spirit Lake complex is so prolific. Another possibility is that observers in the Freeman-Custis group succumbed to the tendency to shorten the distance between a point of interest and a nearby landmark. Maybe the village was not exactly in front of Boyd Hill. Maybe it was 8 or 10 km downstream. A third possibility is the explorers saw some farmsteads at the north end of the village but missed the main body downstream, either because it was away from the active river channel at that time, or because the houses had already collapsed or had been burned by the Osage. It is not too farfetched to envision a dispersed village consisting of farmsteads and fields extending along 20 to 25 km of the valley. Finally, of course, there is the possibility that the Spirit Lake complex was a few decades earlier than the village the Freeman-Custis group saw. But here again we must then ask what happened to the putative village in the Boyd Hill locality.

There is no way to evaluate these alternatives with the data now available. As Williams said of this problem 16 years ago, "this enigma, for the location of the site fits the historic data exceptionally well, must be solved in the ground " (1964:562). We agree, and now, for the first time, we have at the Cedar Grove site some data in the ground to work with.

Chapter 3

ENVIRONMENTAL CONTEXT AND RECENT GEOMORPHIC HISTORY

By E. Thomas Hemmings

INTRODUCTION

In this section we present some preliminary results of our geomorphological analysis of the Cedar Grove site. Geomorphic data are now recognized as one of the critical dimensions for understanding the record of prehistory in the Great Bend region (Gibson 1978; Pearson 1979; Schambach 1979; Hemmings 1981). Methods and goals of geomorphological study in archeological sites or regions have been discussed in some detail by various earth scientists and notably by Butzer (1977). Stated succinctly by Davidson (1972:18), the geomorphologists involved in an archeological project must "recognize elements of the terrain which were included within the behavioral environment of (past) communities." A second major contribution of the geoarcheologist is the explication of natural processes that affect site preservation or destruction.

The scope of this study is restricted largely to the Recent floodplain of Red River and to the immediate environs of Field Revetment (river miles 361 to 364). The Cedar Grove site was visited and examined when first exposed by revetment construction, and project boring logs were briefly inspected at that time (May 13, 1980). Another most important source of environmental data used in this analysis is the

series of detailed maps and aerial photographs available for the Great Bend region. In particular, these sources permit tracing of Red River channel changes and effects of flood events at intervals of a few years:

Maps:

1822 and 1841-42, General Land Office Plats
1877, Red River Survey, Sheet 6 (1:10,000)
1947, Maps of Red River, No. 2 (1:62,500)
1952 and 1975, U.S. Geological Survey, Garland, Arkansas (1:24,000)
1968-69, Red River Hydrographic Survey, Sheet 40 (1:10,000)
1974, Distribution of Alluvial Deposits, Lewisville, AR (1:62,500)

Aerial Photographs:

1930 and 1976, U.S. Army Corps of Engineers, New Orleans District
1963, 1969, and 1978, Soil Conservation Service, U.S. Department of Agriculture

Red River Floodplain

The Cedar Grove site, buried but intersected by the modern river channel, lies near the central axis of the Recent floodplain. This broad alluvial plain, 16 km wide from valley wall to valley wall, is characterized by low relief and distinctive features of topography and drainage. The alluvial ridge or natural levee of the Red River has an average maximum elevation of about 68.5 m msl in the vicinity of the Cedar Grove site; linear backswamp or floodbasin zones flank this ridge at about 66 m msl (U.S. Geological Survey 1976). These elevations will be emphasized later in discussion of Cedar Grove site occupation and seasonal flooding. At the outer edge of the floodplain, valley walls, consisting of a series of Pleistocene terraces, rise more or less abruptly to the rolling upland surface of the West Gulf Coastal Plain.

The active channel of Red River consists of a series of symmetrical and asymmetrical meander loops, and is crowded by oxbow lakes of similar channel length, width, and form. This sinuous channel and its tier of lakes comprises the "modern" meander belt of Red River, 3 to 6 km in width. Figure 5 indicates the relationship

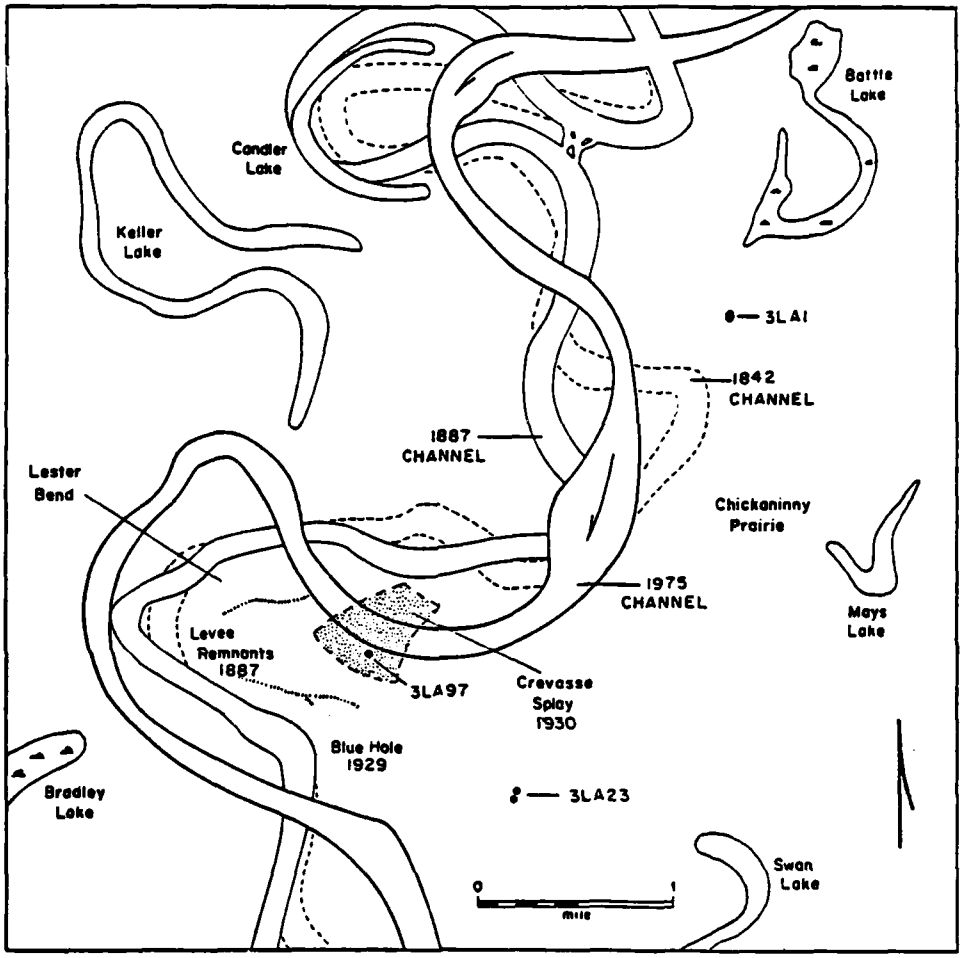


Figure 5. Red River channel changes and floodplain features in the vicinity of the Cedar Grove site

of the Cedar Grove site to the 1975 Red River channel, local oxbow lakes, and other features to be discussed presently.

Pearson (1979) has described and interpreted earlier meander belts or remnants in this portion of the Red River, based on the position and plugging of oxbow lakes and on archeological site distribution. According to this interpretation, modern meander belt terrain is younger than A.D. 1600, and a portion of an intermediate age meander belt (1000 B.C. to A.D. 1600) lies immediately eastward, partly on the levee backslope and partly within backswamp. Battle Lake, Mays Lake, and Swan Lake in Figure 5, all partially filled depressions, reflect this earlier stage of Red River activity. Even earlier traces of meander scars (before 1000 B.C.) are discernible nearest to valley walls (Pearson 1979). Many complexities of floodplain erosion and deposition remain to be worked in this region, but this initial delineation of meander belts has shown itself useful in archeological survey and assessment.

Alluvial Deposits and Soils

The Red River floodplain is underlain by late Quaternary alluvium which has been subdivided as topstratum and substratum deposits (Smith and Russ 1974). Borings in the vicinity of Garland City and the Cedar Grove site show about 27 m of this valley fill overlying an irregular Tertiary surface. Substratum sands and gravels are everywhere deeply buried, but are scoured by the thalweg of the Red River and are secondarily deposited on point bars and channel bars exposed at low water.

Topstratum deposits of sand, silt, and clay are exposed at the surface and in the constantly eroding banklines of Red River. These deposits are of special interest as the geological and edaphic context of all known floodplain archeological sites, including Cedar Grove. The fine-grained topstratum material is typically a deep red-brown color, reflecting a major source area in the Permian red beds of Texas and Oklahoma (Hoelscher and Laurent 1979). This topstratum reaches a maximum thickness of about 15 m in local borings (Smith and Russ 1974). Environments of deposition, interpreted from core sample locations and sedimentological characters include natural levees, point bars, abandoned channels, and backswamps. The alluvial

ridge traversed by the modern channel of the Red River has aggraded during the past few thousand years, primarily through accumulation of point bars on convex banks, but also through levee development on concave banks during flood stages. These point bar and levee deposits, relatively coarse and poorly sorted in comparison to backswamp or floodbasin fills, are exposed in banklines throughout the Field Revement project area and at the Cedar Grove site itself. Two profiles along this bankline which show point bar deposits were recorded by Pearson and DuCote (1979: Figures 4-21 and 4-22). One of these profiles recorded very near the site location may also record a recent flood episode (discussed further below).

No recent detailed soil mapping is available for the Field Revetment project area, but an initial assessment may be based on the soil survey of Hempstead County upstream (Hoelscher and Laurent 1979). Natural levee soils along the Red River are well drained Oklared fine sandy loams and somewhat poorly drained Latanier silty clays. These soils are neutral to moderately alkaline and highly fertile, yielding more than 1.2 MT of corn per hectare (20 bushels per acre) without fertilization and up to 4.1 MT (65 bushels) with modern management techniques (Martin and Carr 1904:13). There is no doubt whatever that the Caddo inhabitants of the Cedar Grove site raised corn or maize, among other crops. Charred maize is now known from at least three sites in the immediate vicinity. A small sample has been botanically described for the Lester Place (3LA38) by Cutler and Blake (1973:10). Soil depletion at the Cedar Grove site and other such sites on the alluvial ridge would have presented no particular difficulty because of periodic overflow and silting.

As a final matter of interest with regard to topstratum deposits and soils, it should be noted that the cutbanks of the Red River expose complex stratigraphy with numerous, discontinuous, weakly developed paleosols marking temporary floodplain surfaces. No detailed stratigraphic or pedologic work has been carried out using these relatively recent bankline exposures. The prospect for locating buried archeological sites and for placing past occupations in a paleoenvironmental context seems very great. The various methods of fluvial geomorphology and sedimentology are relevant to this approach (Leopold et al. 1964; Allen 1965; Costa 1974; Lenzer 1978).

Floral and Faunal Resources

The biotic resources available to the Caddo inhabitants of the Cedar Grove site can be dealt with here only in general fashion. Much work remains to be done in the analysis of floral and faunal material from archeological sites in this region (Hemmings 1981). Since Cedar Grove was occupied as late as the eighteenth century, some salient features of contemporary floodplain biota can be reconstructed from early historical records.

The Red River floodplain was chiefly bottomland hardwood forest interrupted by open oxbow lakes, swampy depressions, and prairie openings. A variety of flood-tolerant forest associations common to the Lower Mississippi Alluvial Valley extended into this region, but shortly gave way upriver (westward) to a zone of forest-prairie transition (Braun 1950). Early nineteenth century maps show occasional prairies of a few square kilometers extent along the edges of the modern meander belt. Chickaninny Prairie was such a small grassy opening with scattered bois d'arc trees around Mays Lake, just eastward of the Cedar Grove site (Figure 3). There appears to be some correlation in this region between floodplain prairies and major Caddo ceremonial centers with their clusters of farmsteads (Hemmings 1981). The bottomland forests, canebrakes, and swamps provided many edible nuts, fruits, seeds, and tubers for human and animal food use (Meanley 1972; Pearson and DuCote 1979). Prairies on fertile levee soils required no laborious clearing and were undoubtedly cultivated where drainage was adequate.

A rich Austroriparian fauna, typical of southeastern bottomland forests, characterized the Red River floodplain in the early nineteenth century when detailed accounts of exploration and trade in furs were compiled. White-tailed deer was a game animal of major importance as it was elsewhere in the Southeast, but many other mammals, birds, reptiles, and fish were detailed in ethnohistoric accounts or are known from a few archeological site collections (Hemmings 1981). A minor element of the regional fauna consisted of Western or Texan species, such as ringtail cat (Sealander 1979).

The distribution of floral and faunal resources on the Red River floodplain was distinctive--a series of diverse, closely spaced, linear microenvironments subject to

flooding in various degrees. Levee soils, edge areas, and riparian habitats were significant features of this meander belt zone. It has been suggested that the Caddo pattern of small dispersed communities on the Red River floodplain represents efficient utilization of meander belt resources, where mixed farming and collecting was the basis of subsistence (Hemmings 1981).

Recent Geomorphic History

The Cedar Grove site has been attributed chiefly to the Caddo V period or about A.D. 1700 to 1800. Detailed General Land Office maps of this area were first made in 1882, and a variety of useful maps and records were made thereafter. The relationship of site establishment, terrain factors, and river activity just prior to 1800 can thus be reasonably inferred, while changes occurring after abandonment can be traced more directly.

Figure 5 presents site location and river channel/floodplain data in schematic form, compiled from maps and aerial photographs at various scales for the years indiated. The map area corresponds to 25 sections in T17S, R25W, but omits section lines for the sake of clarity. In 1842 the Cedar Grove site was inside a prominent bend and near its axis (here referred to as Lester Bend). The expected enlargement and migration of this meander downvalley is traced in Figure 5 for the relatively brief period 1842-1975. During this period the upstream arm of Lester Bend migrated more rapidly than the downstream arm, probably due in part to a resistant clay plug at Bradley Lake, intersected by the river west of the "Blue Hole" (Figure 5). Eventually Lester Bend would have created an oxbow lake by neck cutoff, a process now interrupted by Field Revetment. Such a neck cutoff occurred in 1887 at Candler Lake, formerly a "gooseneck" meander known as Crowwell Bend; the Kellar Lake cutoff, however, occurred prior to 1822. This lake has remained open water, despite overbank floods, silting, and vegetation, for more than 160 years. These observations give some temporal scale to the various local floodplain features within the modern meander belt. It is reasonable to believe that the Cedar Grove site was established within an earlier version of Lester Bend, and was markedly closer to the active channel on the west and south. This location, on or near the convex bank of the

downstream arm, was building by point bar accretion and not eroding in the ordinary meandering process. A similar conclusion was reached with regard to channel geometry and the Spirit Lake site location (Hemmings 1981).

Both the Spirit Lake and the Cedar Grove site inhabitants appear to have taken advantage of point bar ridges, which may in some cases exceed all other floodplain features in elevation. In the latter site, differential elevations of the midden zone, recorded in test excavation units, indicate a low ridge (Chapter 4). This low ridge, however, is buried by about 1.2 m of sand and silt, and no characteristic arcuate ridges are discernible here at the surface or on aerial photographs. Burial of the Cedar Grove site has occurred very recently as a result of overbank flooding; understanding this episode of flooding and alluviation has implications for ongoing and future archeological work in the Red River floodplain.

Patterson (1971:Appendix B) presents annual flood date for a gauging station at Garland City, as well as for other Red River gauging stations in Arkansas. During the years 1907-1949, bankful stage (9 m) was exceeded frequently, peak discharges usually occurring during April or May. Major floods (gauge heights over 1 m and/or long duration) occurred in 1908, 1915, 1920, 1927, 1935, 1938, and 1945 (U.S. Army Corps of Engineers 1961). The floods of particular interest here peaked during the spring of 1927, 1929, and 1930; these floods are known to have affected Lester Bend and the Cedar Grove site in specific ways. The 1887 Red River Survey maps show Lester Bend and other bends above and below Garland City under extensive cultivation and enclosed by private levees. Maintenance of such levees was inevitably overwhelmed by downvalley migration of bends and overbank floods.

The 1930 aerial photographs of Lester Bend (made by the U.S. Army Corps of Engineers, New Orleans District) show the profound effects of recent flooding on and near the Cedar Grove site location. The levee line along the upstream arm of the bend was removed over a broad area by bankline retreat, and an extensive sandy crevasse-splay emanated from this breach and spread out across the neck of Lester Bend (Figure 5). Crevasse-splays of this kind are derived from channel deposits, are moderately coarse and well sorted, may intertongue with finer, better sorted levee deposits, and may reach a meter in thickness (Allen 1965:148). It is probable that

the greater part of the 1.2 m fill overlying midden zone at Cedar Grove was deposited in the 1927, 1929, and 1930 spring floods. Other floods and recent cultivation may also have registered their effects on this 1930 crevasse-splay and adjacent floodplain surface.

One result of the crevasse-splay seems to have been local augmentation of elevation to about 73 m msl (shown on the detailed Red River Hydrographic Survey, Sheet 40, but not on U.S. Geological Survey quadrangles). Although the Cedar Grove midden zone has been tested and mapped, precise elevations have not yet been determined. Evidently the maximum elevation of this midden would not exceed 68.6 m msl, noted previously as the average maximum elevation of the floodplain locally. By way of comparison the approximate basal contour of Battle Mound northeast of Cedar Grove is 69.1 m, while that of the Egypt mounds, southeast, is 68.6 m (3LA1 and 3LA23 respectively, in Figure 5). As inferred for the Spirit Lake site (Hemmings 1981), periodic spring floods would have inundated Cedar Grove and caused the inhabitants to withdraw temporarily to higher ground.

Conclusion: The Cedar Grove Site and the Red River Regimen

Geomorphological analysis of the Cedar grove site and its floodplain locale has two principal goals: (1) recognition of terrain elements included in the behavioral environment of this eighteenth century Caddo community, and (2) delineation of natural processes which have subsequently affected the archeological record. The following conclusions and comments are preliminary and may warrant further investigation through field studies at Cedar Grove and similar floodplain sites.

1. The Cedar Grove site was established within the active meander belt of the Red River on advantageously elevated terrain. The substratum selected for occupation was probably a recently formed point bar ridge near the downstream arm of Lester Bend. The Caddo certainly understood the meandering river regimen well enough to avoid sites of imminent erosion, and may even have selected areas undergoing accretion. However Caddo sites established in the way of meandering will not have survived in the archeological record.

2. The meander belt or alluvial ridge habitat provided optimum access to

fertile levee soils and diverse floodplain flora and fauna. Spring flooding very likely affected all meander belt occupation sites on a periodic basis, causing temporary abandonment and delaying the planting of crops. A highly beneficial result of flooding was the replenishment of nutrients in levee soils and in floodplain lakes and bayous.

3. A localized crevasse-splay deposit dated to the spring of 1930 and perhaps also 1927 and 1929 flood deposits buried the Cedar Grove site under more than a meter of sand and silt. This episode of alluviaton departs from the more gradual rate of accumulation occurring on the alluvial ridge or in backswamp during the last few thousand years. Cedar Grove may be an unusual case of a very recent, but deeply buried, archeological site. However, it is apparent that many prehistoric sites in the Red River floodplain cannot be detected by standard methods of archeological reconnaissance. Preliminary geomorphological analysis to establish the age of topstratum deposits and floodplain surface, followed by an appropriate deep testing program, is recommended for localities where major construction and disturbance will occur.

Chapter 4

SUMMARY OF FIELD INVESTIGATIONS

Neal L. Trubowitz

The archeological field research began on June 18 and was completed on June 25, 1980. Fieldwork was limited to an eight-day period by budget constraints and time restrictions. For the first two days of work a mapping party of crew chief David Waddell and from one to two assistants made a surface reconnaissance of the site and set up a datum point tied into stakes along the revetment road (structural aximuth line station 166 + 50 was designated as archeological grid stake N500, W500) and mapped in all visible site features. During this period Jim Toney of the Arkansas Archeological Survey was obtaining written landowner permission to conduct the excavations, and arranging for power equipment.

On June 20, Schambach directed a crew of six paid staff and volunteers in the first day of testing, including bulldozer trenching. After completing his obligations on another Corps of Engineers project, Trubowitz arrived at the site the following day and took over the direction of the field research in collaboration with Schambach. Crew size fluctuated from then on between 7 and 12 persons, depending on the number of volunteers beyond the budgeted project staff of five (field archeologists, crew chief, and three field assistants).

Weather conditions during the field research were generally hot and humid, with the work day set between 7 A.M. and 3 P.M. to avoid the hottest part of the day. Rain on June 19, 20, and 22 partially interfered with the work. On June 19 rain delayed the start of work, and on June 20 it slowed down but did not stop investigation although wet and muddy conditions made taking notes difficult in the field. A severe storm and tornado in the late afternoon of June 22 forced the crew out of the field and filled the two test excavation units open at that time (Test Units 3 and 4).

After the theodolite mapping station was set up on what appeared to be the highest remaining elevation on the site (vegetation had been removed from the entire site area, disturbing the natural surface) a series of bulldozer trenches and hand-excavated test units were opened. These included two north-south and four east-west bulldozer trenches, five 2 m squares (Test Units 1, 2, 3, 4, and 6), one 1 x 4 m trench (Test Unit 5), and four trench wall profiles (the south profile near the historic cemetery in N-S Trench 2, in Section 3 of E-W Trench 3, and in E-W Trench 4) (Figure 6).

North of the revetment work road, E-W Trenches 1 and 2 were excavated, while south of the road E-W Trenches 3 and 4 were placed. Schambach opened the first three east-west trenches on June 20 in consultation with Carroll Kleinhans, New Orleans District Corps archeologist. Trubowitz and Schambach later added extensions of E-W Trenches 2 and 3, and opened up E-W Trench 4. The two north-south trenches, previously disturbed in the course of construction work, were cleaned both by hand and additional bulldozer work.

The bulldozer cuts were made with a D7 machine furnished by the construction contractor of the Corps of Engineers (Figure 7). As it was incapable of cutting short 10 m long trenches (as envisioned in the research proposal) without damage to the site, longer trenches were cut to the width of the machine (4 m). Ultimately E-W Trench 1 was 68 m long, E-W Trench 2 was 103 m long, E-W Trench 3 had sections of 51, 28, and 47 m in length, E-W Trench 4 was 61 m long, and N-S Trenches 1 and 2 were 50 and 51 m long respectively. The operator was instructed to take as shallow a cut as possible (about 30 cm) when nearing the level of the buried cultural strata, thereby providing good control over the recognition of the cultural layer in the bottoms and sides of the trenches. Potential archeological deposits found in the

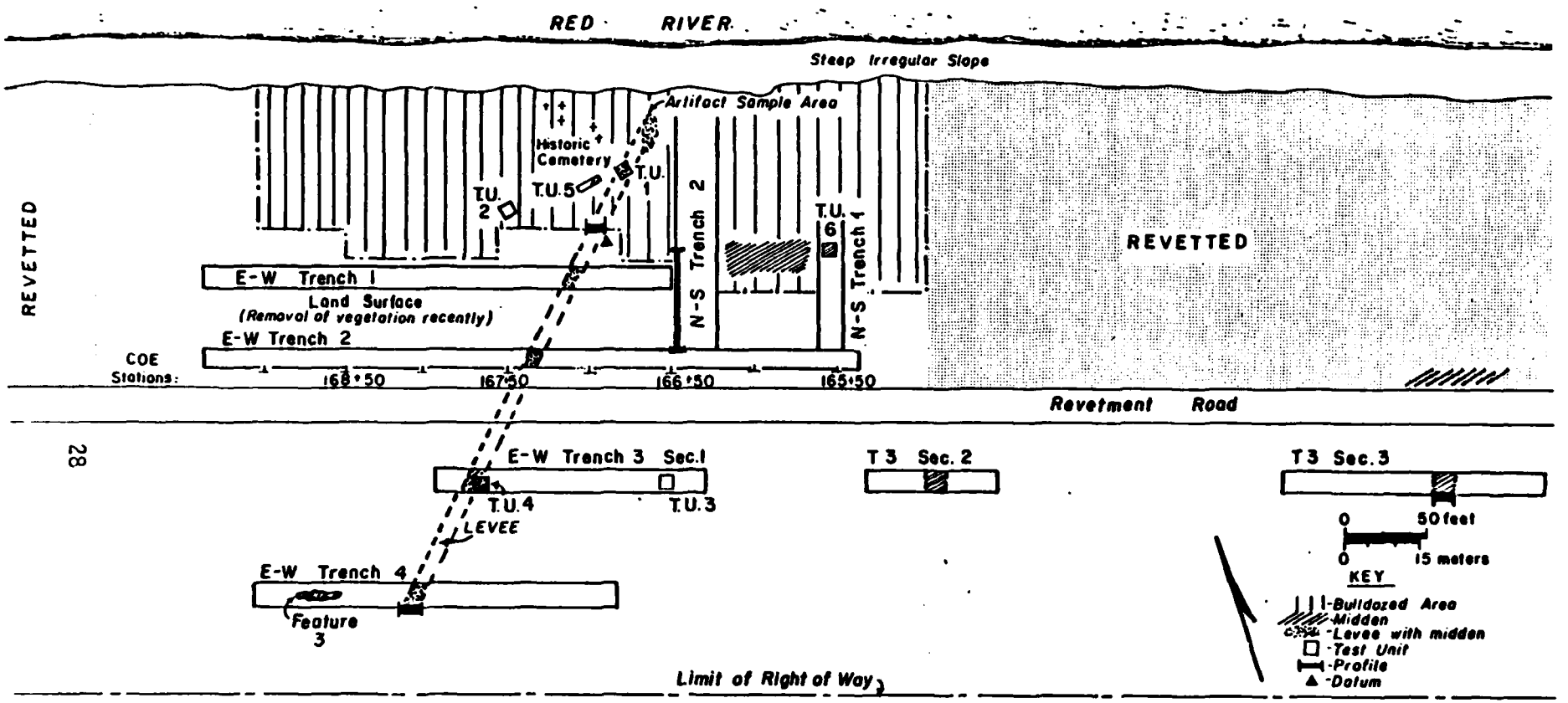


Figure 6. 3LA97 site plan (6/25/80) (approximate scale)

Figure 7. Cutting E-W Trench 2, looking west

trenches were checked with trowels and shovels after their initial visual identification.

The first bulldozer trench opened was E-W Trench 2. After dark soil containing aboriginal debris was struck in this trench, Trench 3 was opened in order to look for the southern limits of the site. When deposits similar to those in Trench 2 were found in Trench 3, E-W Trench 1 was opened to confirm the presence of the deposit or soil contour on the site interior, with positive results. As E-W Trench 3 was still exposing cultural remains, E-W Trench 4 was opened south of it, still in search of the southern site limits. Additional remains were found in that trench (see below), but further deep testing to the south could not be done as we had reached the 122 m revetment right-of-way limit. Trenches 2 and 3 were extended to the east of their original locations to try to determine the horizontal extent of the cultural occupation on that side of the site. With the exception of E-W Trench 4, where we also sought to confirm the presence of a historic levee, the deep trenching was stopped as soon as cultural remains were revealed.

On the north edge of the site most of the alluvial overburden had already been removed during the construction activities that initially revealed the historic cemetery. There also had been some preliminary clearing done by Carroll Keinhans and John Miller on April 28 and 29, 1980. Hund-dug test units were employed to define the aboriginal occupation there. Test Unit 1 was opened in an area that promised to provide information on the depth and characteristics of the archeological occupation, including an artifact sample, as well as to search for possible postmolds and other features. Test Unit 2, to the west of the first unit, was placed to look for the limits of the site. As aboriginal midden was found in Test Unit 1 but not in Test Unit 2, Test Unit 5 was later excavated between them to determine more precisely where the aboriginal midden thinned out.

Test Units 3 and 4 were dug in the first section of E-W Trench 3 to check the stratigraphy and archeological deposits and gather artifact samples revealed in the trenching. Test Unit 6 was opened in N-S Trench 1 for the same purpose there.

Initially the first two test units were taken down in 10 cm increments with shovels,

screening the dirt through 6.4 mm mesh, but as this method was time consuming and was not producing any data on cultural stratigraphy, the units were thereafter shoveled out and screened in natural levels. When a deposit was determined to be sterile of cultural remains it was removed without further screening. Where features were recognized during the excavation, they were removed as a unit with shovels and trowels. Soil samples were taken from the features and major stratigraphic levels after appropriate notes, profiles, floor plans, and photographs had been completed. Color identification of the soil profiles was delegated to one crew member for the entire site in order to keep those designations consistent. The bottoms of midden strata and features were shovel-skimmed to search for settlement pattern features such as postmolds. When possible postmolds were encountered they were cross-sectioned to determine whether they were natural or cultural in origin. The southeast corner of each test unit was designated as unit datum.

Excavation in the test units was terminated under different circumstances. In Test Units 1, 2, 4, and 5 the excavations passed through the primary aboriginal occupation level and further deep testing would have required the opening of much larger excavations. When Test Units 2 and 5 encountered historic grave shafts, no further digging was done in those units. Test Unit 3 could not be taken down to the possible cultural level because it filled with rainwater after the June 22 storm and did not dry out before the end of the testing program (Figures 8 and 9). Test Unit 6 was abandoned after working it down to 20 cm in its southeast quadrant, as the soil there consisted of a clay that was difficult to screen and contained few cultural remains; other work such as completing the profiles had higher priority.

Summary forms were filled out on all of the hand-dug test units that were excavated (test units and profiles), listing all floor plans, profile drawings, and feature forms for that unit. A field catalog listing provenience was kept for all of the artifact and soil samples that were gathered. Separate photo records were maintained; in addition Trubowitz, Schambach, and Waddell kept individual notes on daily work and field observations. Written records of the project will be stored at the Coordinating Office of the Arkansas Archeological Survey with copies and the recovered artifacts under curation at the Magnolia station of the Arkansas Archeological Survey.

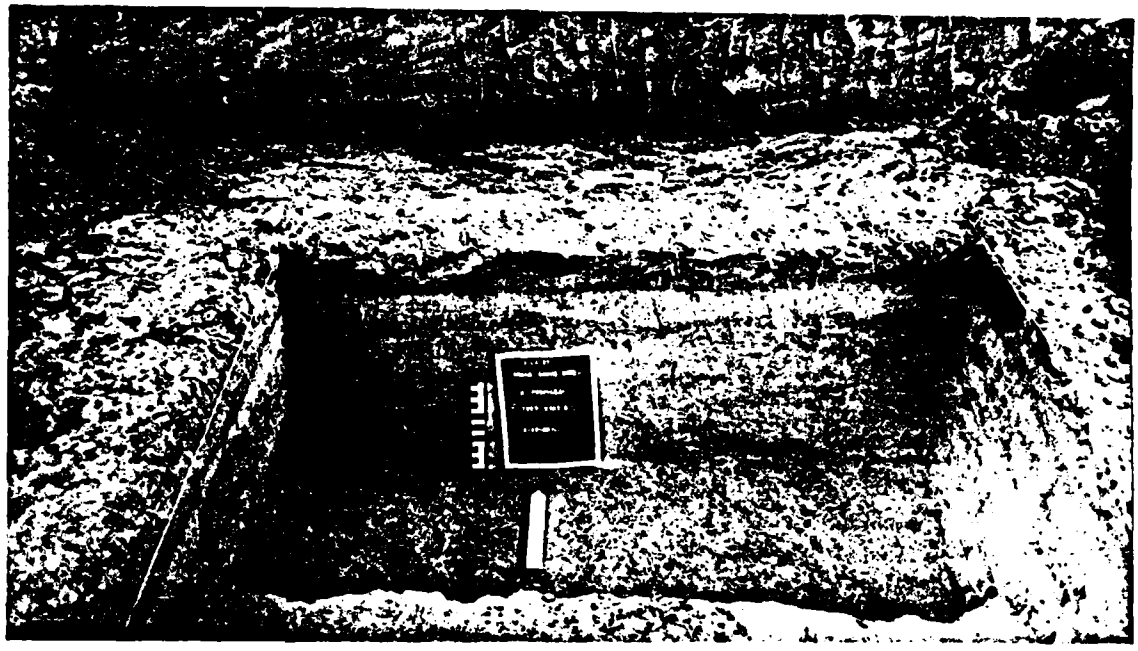


Figure 8. Test Unit 3 before rainstorm

Figure 9. Test Unit 3 after rainstorm

STUDY RESULTS

Two aboriginal components and two historic components were found on the Cedar Grove site. Most of the recovered material was from a Caddo V farmstead probably dating between A.D. 1700 and 1800. An earlier Caddo IV occupation dating between A.D. 1500 and 1700 was found on the east side of the research area. The historic occupations included a levee, possibly antebellum in age, and the historic cemetery (ca 1865-1927) on a natural rise.

Site Limits

Due to the limited time and funds available, the large size of the site, previous disturbance, and the restrictions imposed by the project right-of-way boundary, the original limits of the aboriginal site could not be defined. Along its north-south axis the site extended for at least 100 m between the riverbank and the right-of-way, and almost certainly goes further south, along a buried natural rise that was found trending southwest to northeast. The historic levee was built on this rise. On the northwest side of the work area the use of a bulldozer by Kleinhans and Miller on April 28 and 29, 1980 revealed that the aboriginal occupation did not extend west of the location of the tombstones uncovered in revetment construction. However, south of the revetment road heavy aboriginal occupation was found west of the rise (E-W Trench 4). On the east side of the project area, artifacts were found eroding out of the revetted bank parallel to E-W Trench 3, Section 3 (on the south side of the road), indicating that the Caddo IV component found in that trench had extended north of the road prior to construction. The east to west dimensions of the site south of the revetment road extended across an area at least 240 m long.

The depth of the cultural occupations varied across the site depending on the amount of ground disturbance caused by prior ground clearing and construction activities. The Caddo IV occupation in E-W Trench 3, Section 3, was almost 3 m below the surface. Over the rest of the site the cultural occupation was found buried between 1 and 2 m of overburden.

It was not possible to continue the deep testing below the depth of the aboriginal middens found between 1.3 and 3 m below the surface as the backhoe hired for this work broke down before it was brought to the site and no replacement was available. In the central work area the deepest penetration below the Caddo V occupation was approximately 0.8 m in the profile done on N-S Trench 2 (Figure 10). The presence of additional components below the 3 m deep Caddo IV component could not be ruled out.

The natural history of the Cedar Grove site was found to be complex. The site's location on the bank of the Red River is a recent phenomenon, probably only several years old. An aerial photograph of the site area taken in 1930 (Figure 11) shows the depositional fan laid out by a flood, probably the great flood of 1927. Light colored sands covered the site area after floodwaters breached the levee north of the site. A small pond or "blue hole" south of the site was formed when the levee there was broken. A 1976 aerial photograph (Figure 12) shows the river close to its present course adjacent to the site, with the blue hole pond still to the south, but the riverbed had changed dramatically in 46 years. The river east of the site may have reoccupied a channel that was abandoned as of 1930.

The position of the aboriginal occupations in relation to the then extant river channel is not precisely known, but the best possibility appears to be that it was west of the site. This hypothesis is based on the concentration of the Caddo V component on what was probably a natural levee rising above the general floodplain, with a gradual tapering off into backswamp areas to the east. Elevation readings taken on the top of the Caddo V midden levels in various excavation units show this slope (Figure 13) between elevations of 28.4 and 26.8 m. (The site datum surface was set at an arbitrary elevation of 30 m.) The site may also have sloped off gradually to the west, but only one cultural level was positively identified in the testing program west of the ridge. The Caddo IV component may have been on a separate rise in a backswamp area as its elevation was slightly higher than the lowest known cultural level (Figure 13). Alternately, as the Caddo IV material was in a clayey deposit, it may have washed down from a higher and better drained area, such as the rise to the west. The Caddo V component did not directly overlie the Caddo IV component

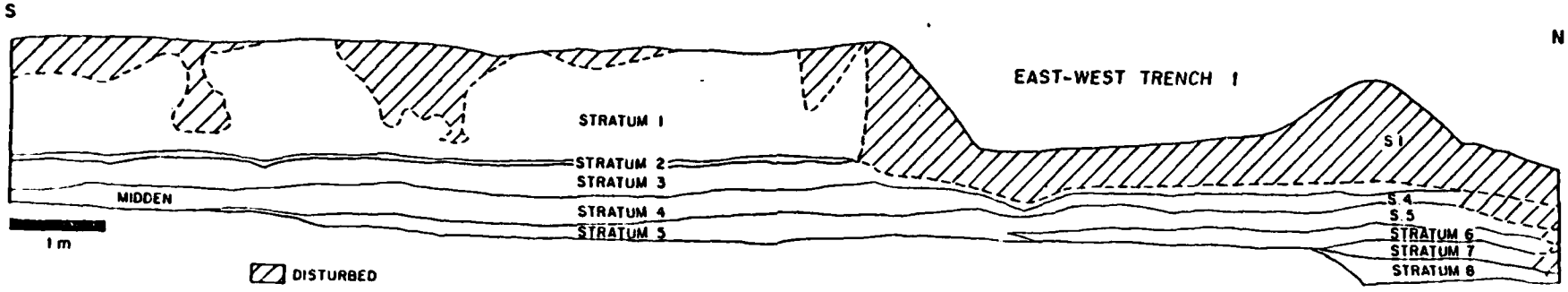


Figure 10. N-S Trench 2 west profile

Figure 11. Site location in 1930 (inside circle)

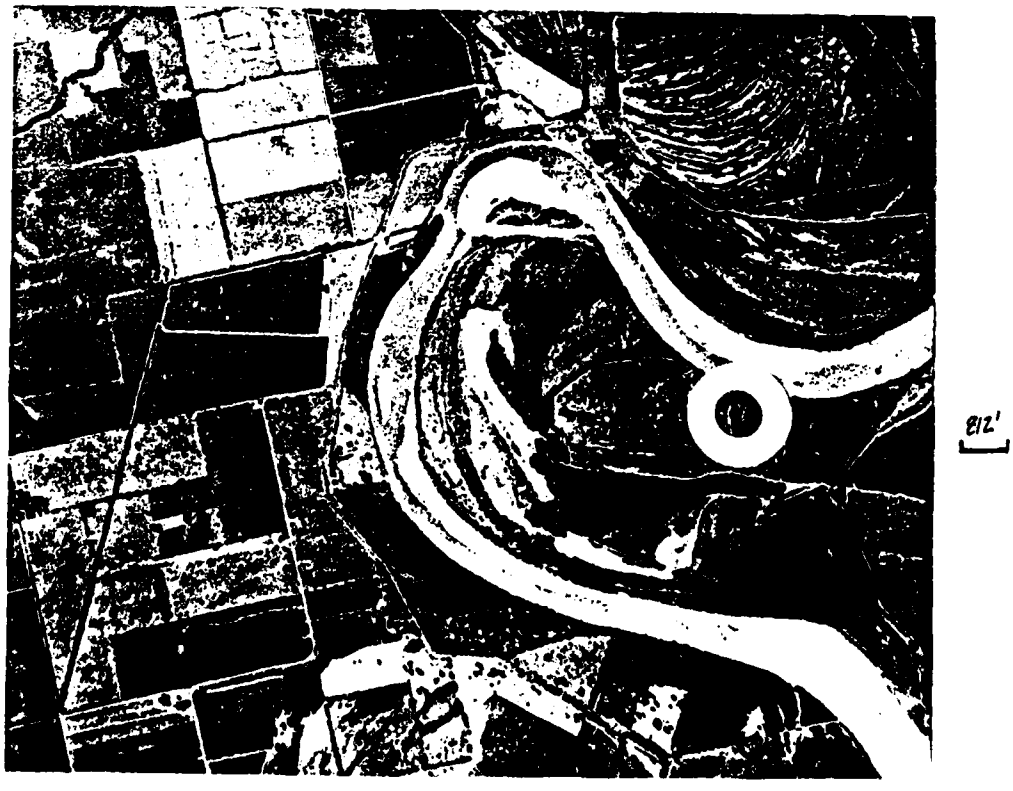
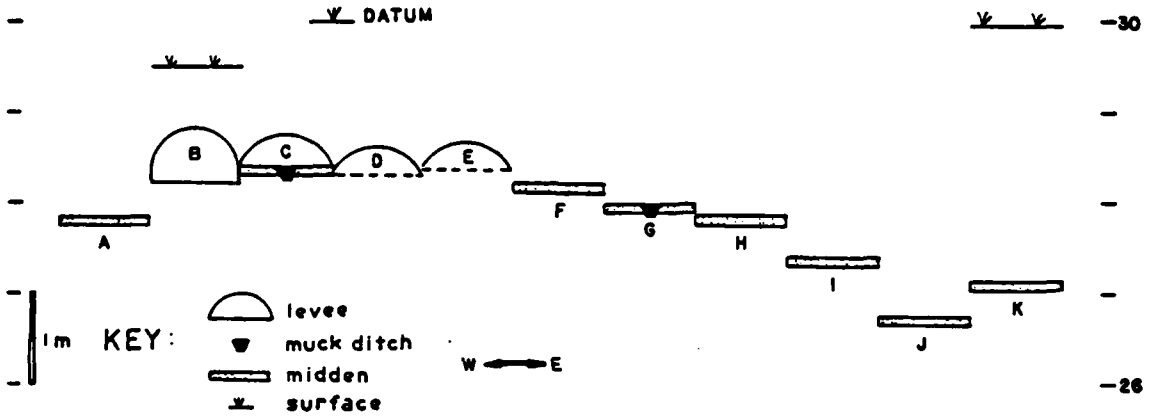


Figure 12. Site location in 1976 (inside circle)



A. E-W Trench 4, Feature 3
B. E-W Trench 4, Feature 2
C. E-W Trench 3, $T^{U}4$, Features 1, 2, and Stratum 24
D. E-W Trench 2, Feature 2
E. E-W Trench 1, Feature 1
F. Test Unit 5, Stratum 20
G. Test Unit 1, Feature 1 and Stratum 20
H. N-S Trench 2, Stratum 4
I. Slope between N-S Trench 1 and N-S Trench 2
J. E-W Trench 3, Section 2
K. E-W Trench 2, Section 3, Stratum 30

Figure 13. Schematic view of midden and feature elevations

in E-W Trench 3, and elsewhere on the site the tests were not deep enough to show whether Caddo IV material extended below the Caddo V occupations or if they were horizontally separate.

The stratigraphy across the site was difficult to correlate while the field research was in progress, and with the exception of the 1927 flood deposits, which were designated as Stratum 1, and midden deposits in adjacent Test Units 1 and 5, labeled Stratum 20, new sequential numbers and letters were assigned to each stratum as it was profiled (Table 2). Soil samples were taken from the strata and analyses of these samples are underway; the results may help correlate the different strata on the basis of their chemical composition, organic content, and pH.

Based on their artifact content, Stratum 4 in N-S Trench 1, Stratum 20 in Test Units 1 and 5 (Figure 14), and Stratum 24 in Test Unit 4 were correlated as part of the Caddo V component. A thin silty clay lens, labeled as Stratum 2 in N-S Trench 1, as Stratum 9 in Test Unit 2, and as Stratum 18 in Test Unit 5. was correlated across the part of the site covered by those test units as the deposit of a single flood that had lapped around the rise. Whether it had covered the rise completely is not known, as the upper deposits that would have included this lens were bulldozed away during construction in the area of test Units 1 and 5. This deposit was probably laid down sometime between 1914 and 1927 (possibly in the flood of 1915) judging from its position in Test Unit 2 (Figure 15) between the level at which historic graves had been started and the 1927 flood deposits. The clay lens clearly had slumped above the shafts of the historic graves.

The bulk of the natural stratigraphy on the site consisted of various sand, silt, and clay deposits, and mixtures of the different materials, all of which were either flood or backswamp deposits. From the amount of overburden found and its relationship to both the aboriginal and historic components, it was concluded that the major episodes of flooding shown in the soil profiles were relatively recent phenomenon, all pertaining to the past 76 years. The flood of 1927 covered the historic cemetery and rendered the land useless to agriculture for many years, until a new soil humus had developed (Miles Lester, personal communication). This flooding completely covered the archeological components, sealing them from disturbance until the river and re-revetment construction cut into them.

Table 2. Straratigraphic summary (3LA97)

Unit Designation	Location(s)	Description	Munsell Soil Color*	Maximum observed Thickness (m)	Age Range Interpretation (all dates A.D.)
Stratum 1	E-W Trench 3 Section 3;N-S Trench TU2,4,5	sand	7.5YR 4/4 brown/dark brown	1.20	1927 flood deposit
Stratum 2	N-S Trench 1	clay	10YR 3/3 dark brown	.06	1914 flood deposit; same as Strata 9,18,H,I,J
Stratum 3	N-S Trench 1	sandy clay	7.5YR 4/4 brown, dark brown	.33	1906-1914
Stratum 4	N-S Trench 1	midden	7.5YR 3/2 dark brown	.30	Caddo V, 1700-1806; same as Strata 20 and 24
Stratum 5	N-S Trench 1	sandy clay	5YR 3/4 dark reddish brown	.30	Pre-1700
Stratum 6	N-S Trench 1	mixed sand	5YR 4/4 reddish brown	.20	as Strata 9, 18, H, I, J Pre-1700
Stratum 7	N-S Trench 1	sandy clay	5YR 3/4 dark reddish brown	.20	Pre-1700
Stratum 8	N-S Trench 1	sand	7.5YR 4/6 strong brown	.23	Pre-1700
Stratum 9	Test Unit 2	clay	5YR 3/3 dark reddish brown	.06	1914-1927; same as Strata 2,18,H,I,J
Stratum 10	Test Unit 2	silt	7.5YR 4/4 brown/dark brown	.19	1914-1927
Stratum 11	Test Unit 2	silt/clay/sand	7.5YR 4/4 brown/dark brown	.14	Pre-1914
Stratum 12	Test Unit 2	clay/silt	5YR 4/4 reddish brown	.15	Pre-1914
Stratum 13	Test Unit 2	clay	7.5YR 4/6 strong brown	.04	Pre-1914
Stratum 14	Test Unit 2	clay silt	7.5YR 3/4 dark brown	.21	Pre-1914
Stratum 15	Test Unit 2	silt/clay/sand	5YR 4/6 yellowish brown	.14	Pre-1914
Stratum 16	Test Unit 2	sand	7.5YR 4/6 strong brown	.21	Pre-1914
Stratum 17	Test Unit 2	fine sand	7.5YR 4/6 strong brown	.19	Pre-1914
Stratum 18	Test Unit 5	silty clay	** dark brown	.04	1914-1927; same as Strata 2,9,H,I,J
Stratum 19	Test Unit 5	sandy silt	** brown	.16	Pre-1914
Stratum 20	Test Unit 5	midden	7.5YR 3/2 dark brown	.29	Caddo V, 1700-1806; same as Strata 4 and 24
Stratum 21	Test Unit 1	sand silt loam	5YR 3/4 dark reddish brown	.27	Pre-1700
Stratum 22	Test Unit 1	silty sand	5YR 4/6 yellowish red	.23	Pre-1700
Stratum 23	Test Unit 4	sand	10YR 4/3 brown/dark brown	.30	1806-1927
Stratum 24	Test Unit 4	midden	7.5YR 4/2 brown/dark brown	.24	Caddo V, 1700-1806; same as Strata 4 and 20
Stratum 25	Test Unit 4	sand	10YR 4/3 brown/dark brown	.12	Pre-1700
Stratyn 26		silty sand	5YR 4/6 yellowish red	.25	Pre-1700
Stratum 27	E-W Trench 3 Section 3	sand	7.5YR 4/6 strong brown	.16	1700-1927
Stratum 28	E-W Trench 3 Section 3	clay	7.5YR 4/4 brown/dark brown	.23	1700-1927
Stratum 29	E-W Trench 3 Section 3	sand	7.5YR 4/6 strong brown	.31	1700-1927
Stratum 30	E-W Trench 3 Section 3	clay with midden lens	5YR 3/3 dark reddish brown	.55(total) .05(midden)	Caddo IV, 1500-1700
Stratum 31	E-W Trench 4	sandy silt	7.5YR 4/4 brown/dark brown	.23	Pre-1700
A	E-W Trench 3 Section 3	humus	** brown	.14	1927+
B	E-W Trench 3 Section 3	humus	** dark brown	.10	1927+
C	E-W Trench 3 Section 3	sand	** light brown	.20	1927+? may be part of 1927 flood deposits
D	E-W Trench 3 Section 3	humus	** dark brown	.02	1927+? may be part of 1927 flood deposits
E	E-W Trench 3 Section 3	sand	** reddish brown	.14	1927+? may be part of 1927 flood deposits
F	E-W Trench 3 Section 3	sand	** dark brown	.09	1927+? may be part of 1927 flood deposits
G	E-W Trench 3 Section 3	sand	** reddish	.11	1927+? may be part of 1927 flood deposits
H	E-W Trench 3 Section 3	finely bedded sand	** white	.30	1927 flood deposit; same as Strata 1,9,18,I,J
I	E-W Trench 3 Section 3	finely bedded sand	** white/brown	.40	1927 flood deposit; same as Strata 1,9,18,H,J
J	E-W Trench 3 Section 3	finely bedded sand	** tan/brown	.48	1927 flood deposit; same as Strata 1,9,18,I,H
Bulldozer disturbance	Test Unit 1	sand	7.5YR 4/6 strong brown	.20	Probably 1927 flood material
Feature 1	Test Unit 1	midden	7.5YR 3/2 dark brown	.69	1700-1827?; levee muck ditch
Feature 2	Test Unit 4	midden	7.5YR 4/4 brown/dark brown	.41	1700-1827? levee mound
Feature 3	Test Unit 4	decayed structure	7.5YR 3/2 dark brown	.15	1700-1806
Postmold 5	E-W Trench 4	decayed structure	10YR 3/3 dark brown	.17	1700-1806

*main matrix color (does not include mottlining)
**Munsell reading not made

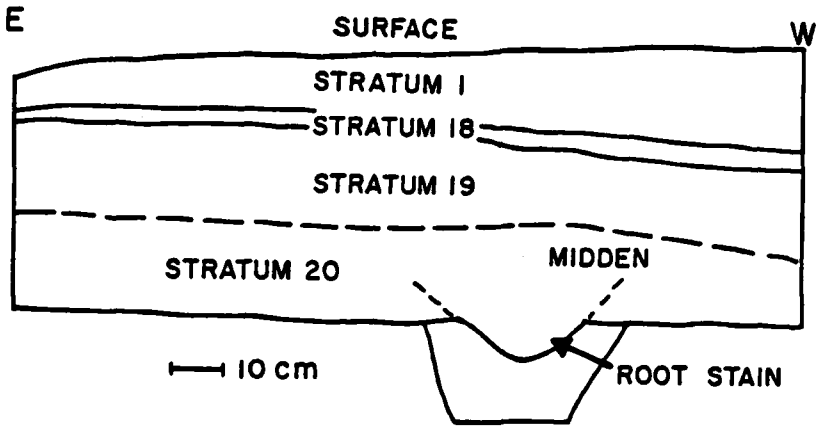


Figure 14. Test Unit 4 south profile

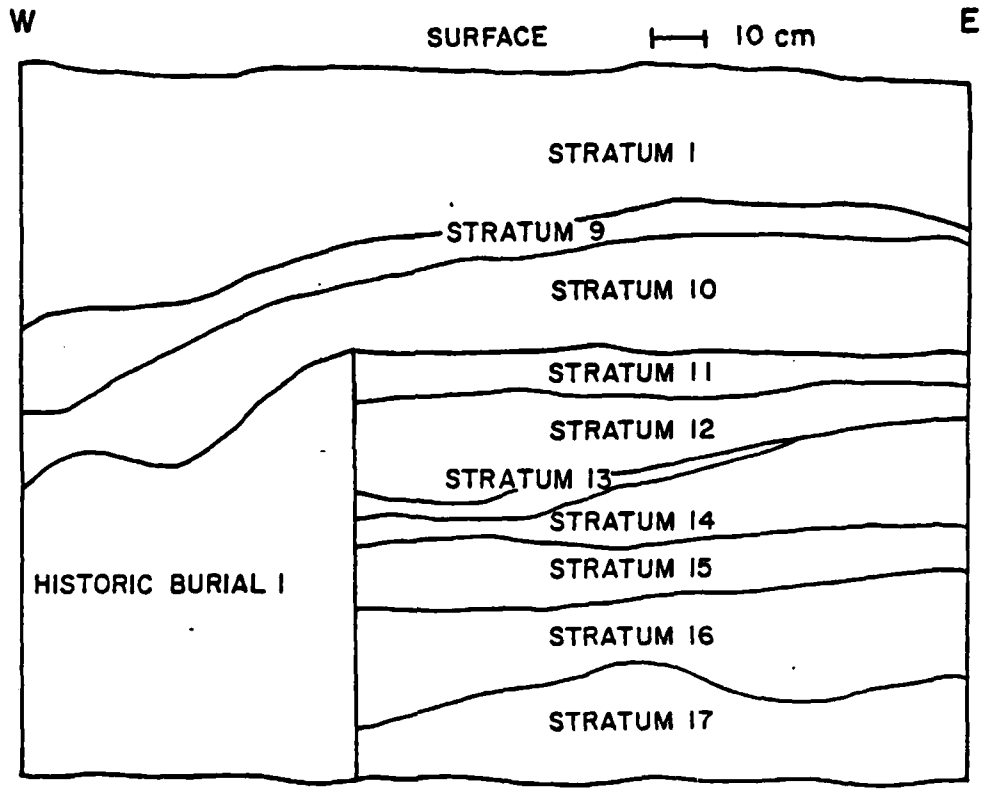


Figure 15. Test Unit 2 north profile

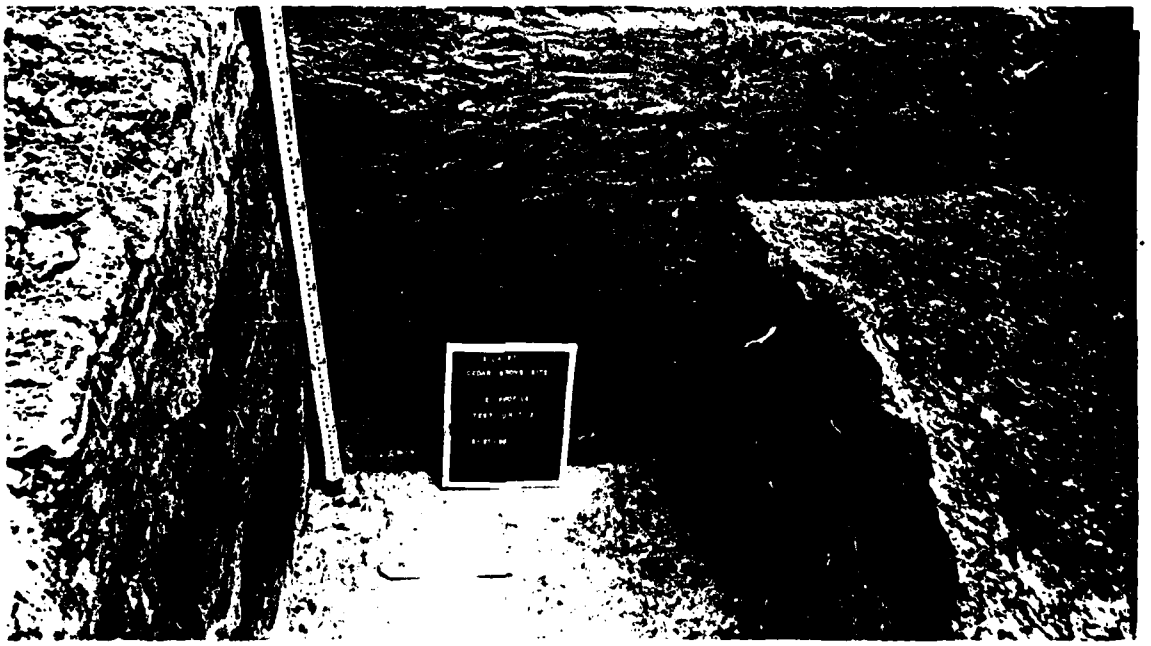


Figure 16. Test Unit 2 profile and floor plan showing Burial 2 outline, looking east

Features

Features from both the historic and aboriginal occupations were found across the site, including a levee, graves from the historic cemetery, midden deposits, and a Caddoan structure.

Historic grave pits were encountered in Test Unit 2 (two burials) and Test Unit 5 (three burials). After recognition, excavation was stopped well above the actual grave bottoms as disinterment was not part of the archeological Scope of Services. In Test Unit 2 the straight shaft walls of Historic Burials 1 and 2 showed in the profiles and floor plans (Figures 15 and 16). Historic Burials 3, 4, and 5 were in the west end of Test Unit 5. They were detected in the slumping of the pits as compared to the surrounding soil matrix. For the most part the historic cemetery appeared to be on and west of the historic levee. Only the eastern edge of the cemetery may still intrude on the aboriginal occupation area, as shown in the differential recovery of prehistoric material in Test Unit 1 (midden and artifacts on the east side of the cemetery) and Test Unit 2 to the west of it (few aboriginal artifacts recovered and there was no aboriginal midden level).

The levee (Feature 2) was found aligned in all four of the east-west test trenches (Figure 6). Its top was noted in E-W Trenches 1 and 2, it was cut through with the bulldozer in E-W Trench 4, and Test Unit 4 in E-W Trench 3, Section 1, was dug into it. A muck ditch (Feature 1) was first dug to anchor the levee and then dirt from either side was heaped up to form the water barrier. The muck ditch was found first in Test Unit 1 and then in Test Unit 4. Both the muck ditch and the levee mound were filled with dark midden soil containing many aboriginal artifacts (Table 3), indicating that these features had been dug through or built with the surrounding aboriginal midden on the rise.

The muck ditch varied in size in its two exposures. Test Unit 1 showed the muck ditch going diagonally across its northwest corner (Figure 17 and 18). There, in

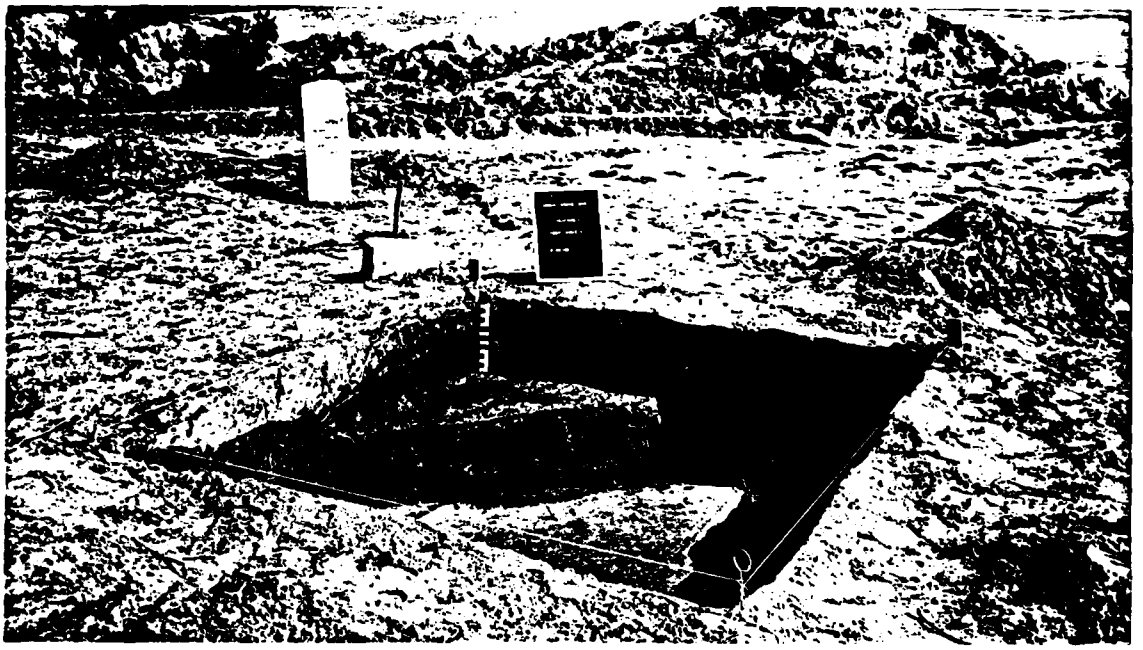


Figure 17. Test Unit 1, Feature 1 muck ditch, before excavation looking northwest to historic cemetery

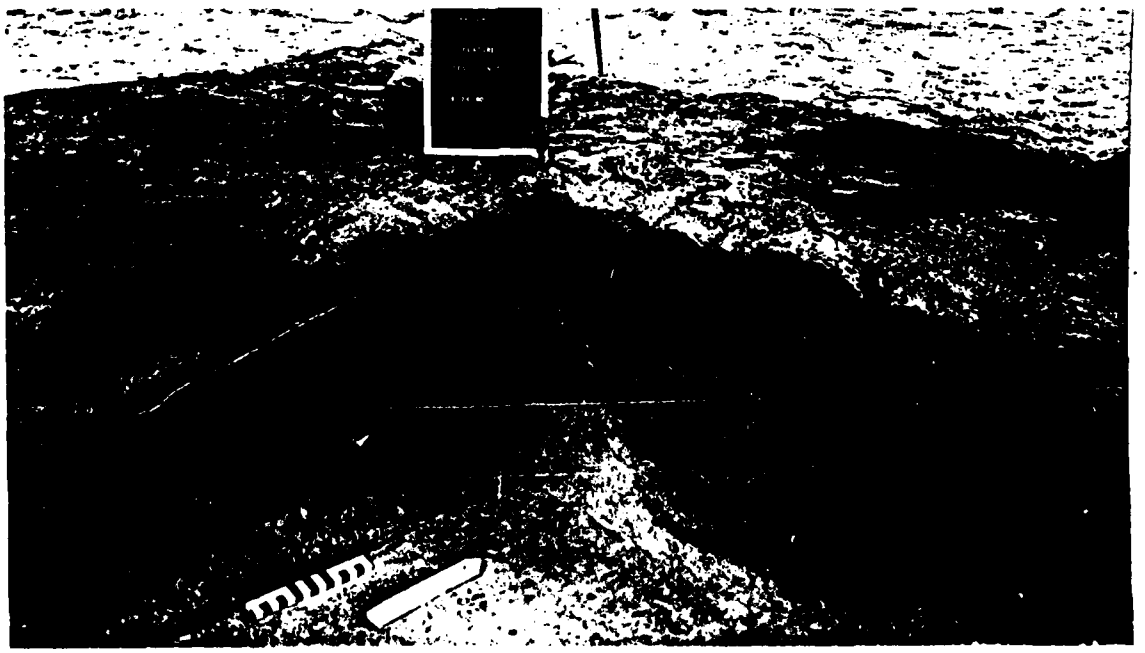


Figure 18. Test Unit 1, Feature 1 muck ditch, after excavation looking northwest

profile, the muck ditch was basin-shaped, between 1.0 and 1.1 m wide. Revetment construction had carved away the levee and possibly part of the muck ditch, leaving its maximum depth in that unit at about 0.7 m (Figure 19). In Test Unit 4 the muck ditch extended about 0.4 m below the levee (Figure 20).

The levee in Test Unit 4 was only about 0.4 m high, while in the profile done in E-W Trench 4 its maximum height was 0.6 m (Figure 21) and its width was spanned the 4.3 m section cleaned for the profile. This profile showed that at least five, and possibly six different loads of dirt had been piled up to form the levee, with the final load covering the entire structure that had then been buried beneath the 1927 flood deposits (Figure 22). The stratigraphy indicates that the levee was built by hand with basket or shovel loads, rather than by machine.

Documents obtainable within the project time frame were examined for evidence of the levee, with negative results. It does not show as a contour on recent topographic maps, on the Corps of Engineers Red River Survey map of 1887, or on the 1823 General Land Office map. Levees were shown on the 1887 map as part of the Sentell Plantation and the Armour Estate in the project area, but these levees trend east-west in the site area (Figure 23), not southwest to northeast as found in the buried levee on 3LA97. The buried levee crossed the boundary between Sections 16 and 17, so if it had existed in 1823 it should have appeared on the government survey map of that date.

Only two historic artifacts were recovered from the levee in Test Trench 4. There, on the east side of the levee, two stoneware sherds (probably from the same vessel), one with a dark brown Albany slip on the interior and a cream colored Bristol slip on the exterior, were found. Date of manufacture for these sherds could span the period between 1820 and the early 1900s.

Although additional archival and archeological research is needed to determine the date of the levee construction this will probably fall between 1820 and 1927. The levee definitely predates the 1927 flood that buried it, and the stoneware sherds show that it postdates 1820, as Albany slip was not developed until after that year in Albany, New York (Lehner 1980). The low height of the levee and its apparent hand

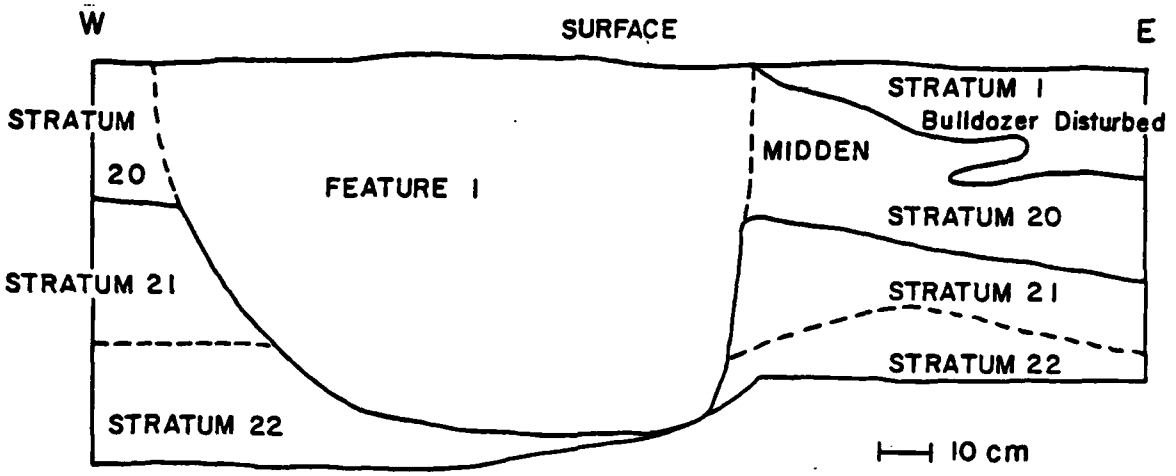


Figure 19. Test Unit 1 north profile

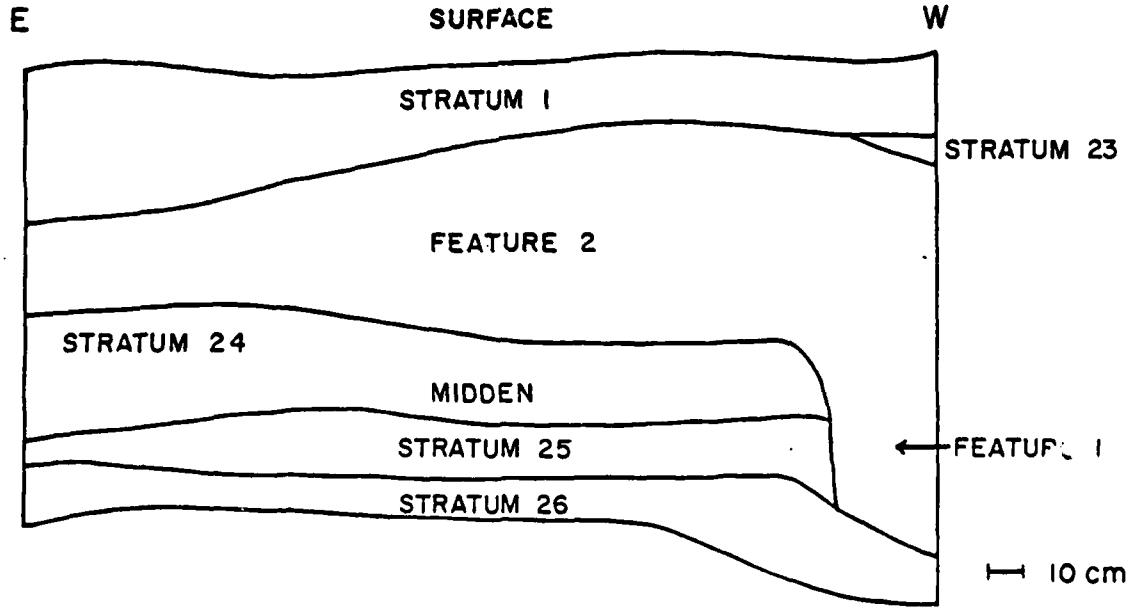


Figure 20. Test Unit 4 south profile

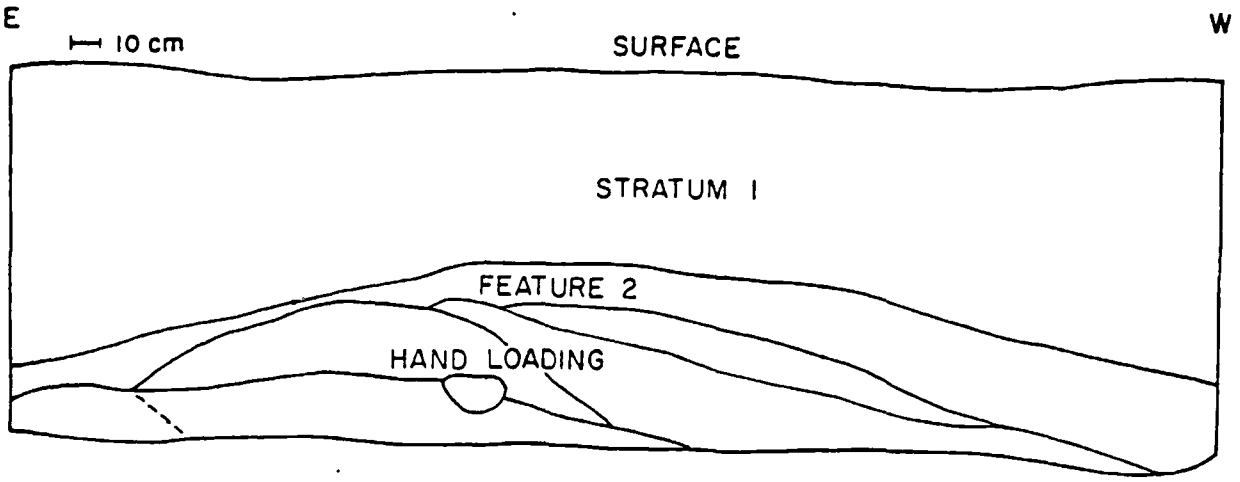


Figure 21. Feature 2 levee in E-W Trench 4, looking south

Figure 22. Feature 2 levee profile showing hand loading in south wall of E-W Trench 4.

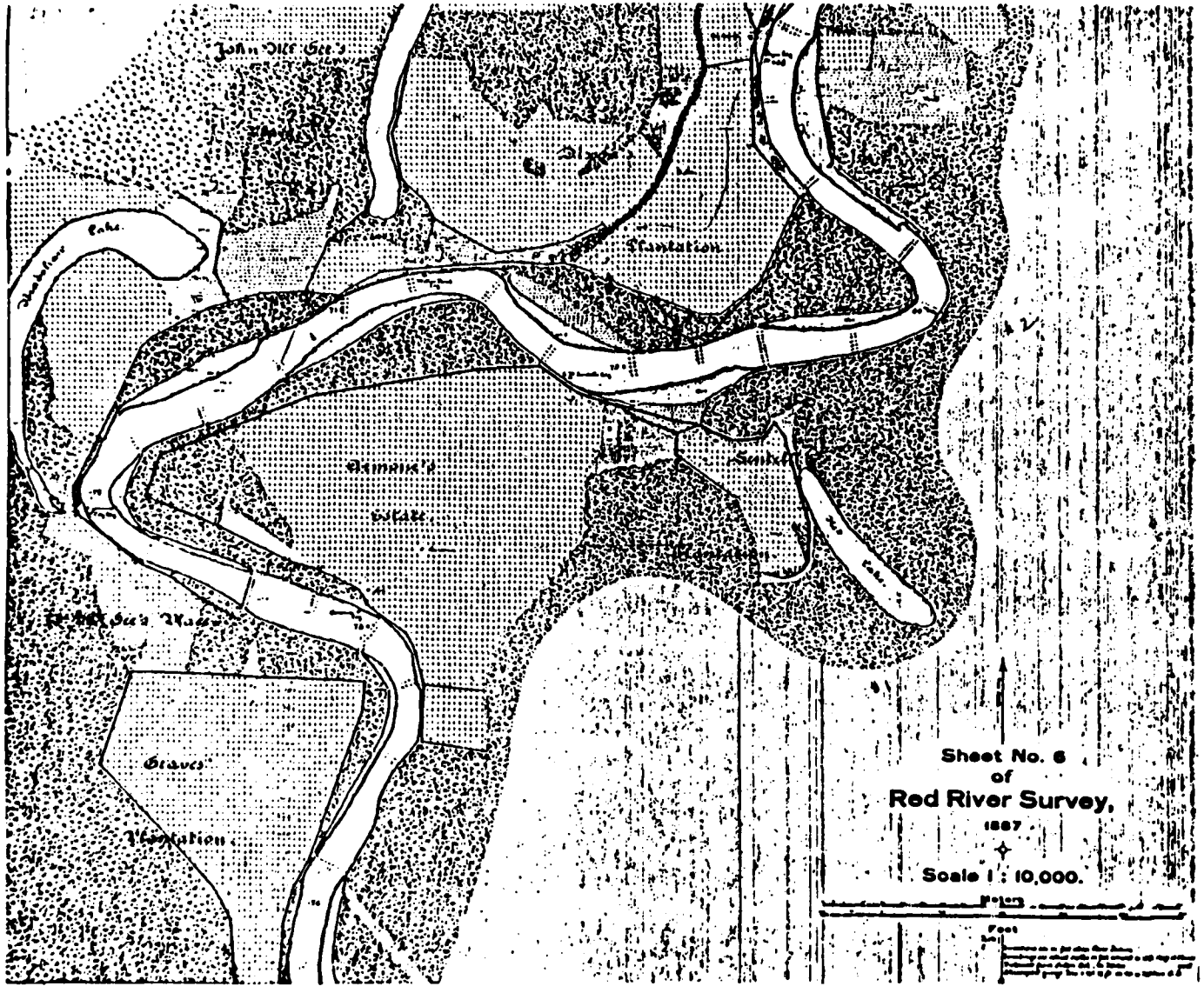


Figure 23. Project area in 1887, showing levees

construction techniques suggest an early construction date, possibly pre-Civil War. The early settlers in the Mississippi Valley and its tributaries, such as the Red River, built low dikes around their farms to detour overflow into existing swamps. As these valleys became more settled each farmer or plantation owner built longer and higher dikes. Eventually the landowners united into organizations that worked to strengthen entire levee lines rather than those surrounding individual plantations (Daniel 1977:5). These organizations lasted until the twentieth century when levee boards and the U.S. Army Corps of Engineers took over flood control construction.

Below the levee (Figures 6 and 13) and extending beyond it on either side was the aboriginal occupation or midden level from the Caddo V component, which was richest along the rise and to the west of it in E-W Trench 4. The occupation was probably situated similarly to that of the Spirit Lake site (3LA83) on an old point bar or natural levee. "Such a location would have been slightly elevated, favorable for drainage, and strategically remote from cutbank erosion" (Hemmings 1981). To the east the occupation intensity gradually diminished downslope as shown by the fewer artifacts recovered in and between the north-south trenches, including Test Unit 6 (Table 3).

Daub, indirect evidence of Caddoan structures, was found on the north side of the site in the test units there (2, 5, and 6), and on the south side of the site in Test Unit 4 and E-W Trench 4. The southernmost trench produced direct evidence of an in situ structure (Feature 3). Large chunks of burned daub (Figure 24) were found undisturbed under flood deposits. This structure was rich in artifacts, but only a small sample was taken, as the feature was discovered on the last day of work and there was not enough time to define it further than to measure its size at about 7 m along the trench, and to trowel out a small test hole. This test revealed definite evidence of a post in profile (Figure 25), confirming the interpretation of Feature 3 as a structure. A dark pit showed in the floor of the trench where this feature was located. This may be an aboriginal burial. The structure was probably a large house. Clarence Webb found a similar buried structure (House 5) which was circular in floor plan, between 11.3 and 11.6 m in diameter, off the mound at the Belcher site (Webb 1959:40).

Table 3. 3LA97 artifact summary

Provenience	Surface (S) and/or Excavation (E)	Historic				Aboriginal																	
						Lithics							Ceramics				Shell		Grit		Bone		Miscellaneous	
A. Site General Surface	S					22	2								11	1	6	10			1		53
B. Cemetery Area																							
1. Artifact Sample Area	S					218	12	2	2		1	1	88	29	179	54	10	62		2	118		778
2. General Surface	S				2	14	1							6	9		3	11		6	27		79
3. Test Unit 1	E				9	416	28			1			1528	224	158	1	39	171			229	1	2815
4. Test Unit 1, Fea. 1	E					139	6	2	1				1596	68	84		8	92			197		2193
5. Test Unit 2	E	1			1	2	1						6				2	1			2		22
6. Test Unit 5	E					85	3						188	54	11	1	8	31			45		426
C. N-S Trench 1																							
1. Test Unit 6	S/E					28	2	1						29	6	2	3	7			11		89
D. N-S Trench 2																							
1. West Profile	E					18	4						3	11	1	4	1	1			3		46
E. Between C and D above	S		1			108	30	3	2	1	1	2	2	31	59	12	23	40			3		319
F. E-W Trench 2	S					4							2	45	1	1							53
G. E-W Trench 3																							
1. Section 1, Test Unit 4	E			1		42	1	1					60		29	1	13	34	1		8		191
2. Section 2	S/E																	1					1
3. Section 3	S/E					10	4										4	2	1	1	4		26
H. N of road, N of E-W Trench 3, Section 3	S												2				3	2			15		22
I. E-W Trench 4																							
1. Feature 2	S/E		2										8	1	5	1	1	2					26
2. Feature 3, east side	S/E					6							29		11		3	5					57
3. Feature 3, west side	S/E					7	2						163		3			1			8		175
TOTAL		1	3	1	12	1119	96	9	5	2	2	3	3686	498	567	78	127	473	2	9	671	1	7311

NOTE: Artifact counts in this table are based on preliminary sorting. There are some small discrepancies between the ceramic totals here and those noted in the text where thorough analysis was completed.

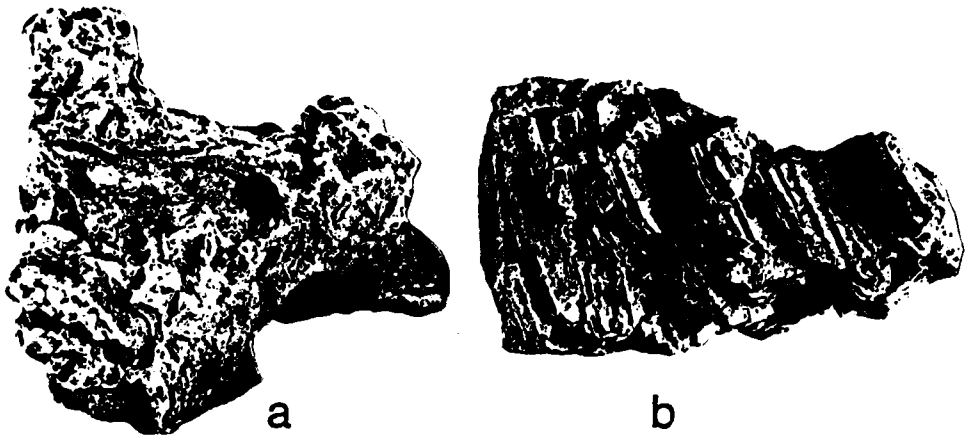


Figure 24. Fiber-impressed daub from Feature 3 (full scale)

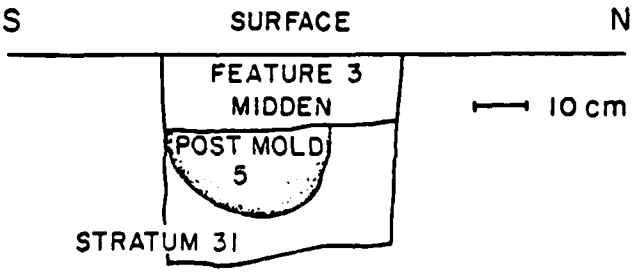


Figure 25. Postmold 5 west profile in Feature 3

As noted above, evidence of a Caddo IV component midden level was found in E-W Trench 3, Section 3 at a depth of 2.8 m below the surface (Figures 26, 27, and 28), and in the revetted area north of the road, across from the trench. Two pieces of daub, possible evidence of a structure, were found in the revetment bank.

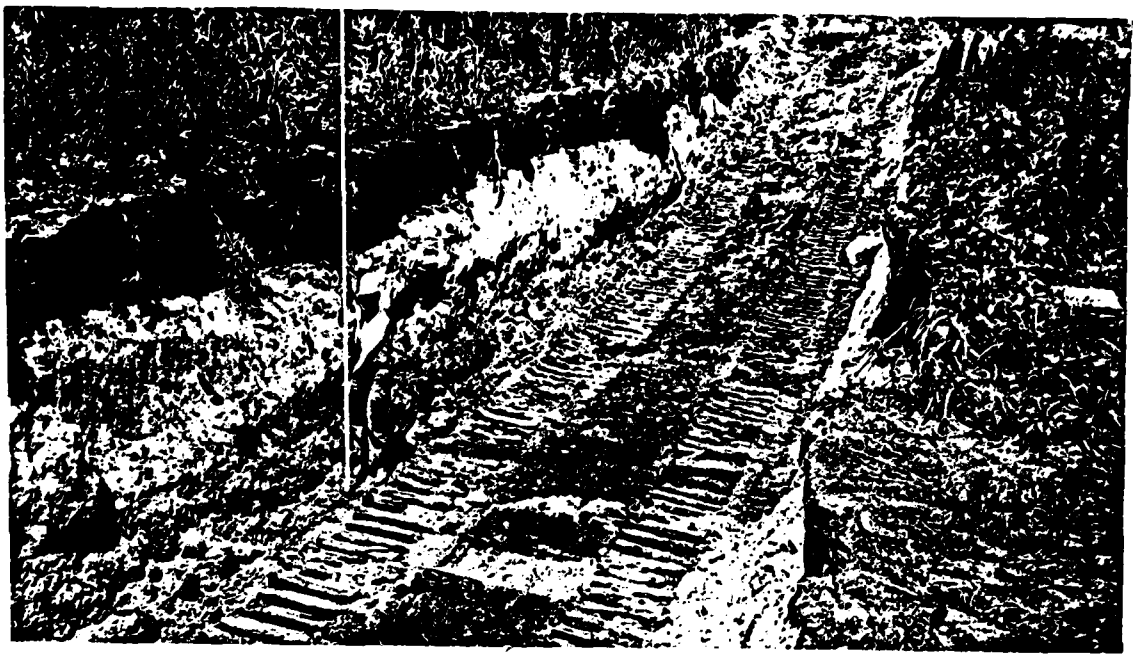


Figure 26. E-W Trench 3, Section 3, looking southwest (crewmember Clancy standing at Caddo IV midden)

Figure 27. Cleaned south wall of E-W Trench 3, Section 3 (Schambach pointing to Caddo IV midden deposit)

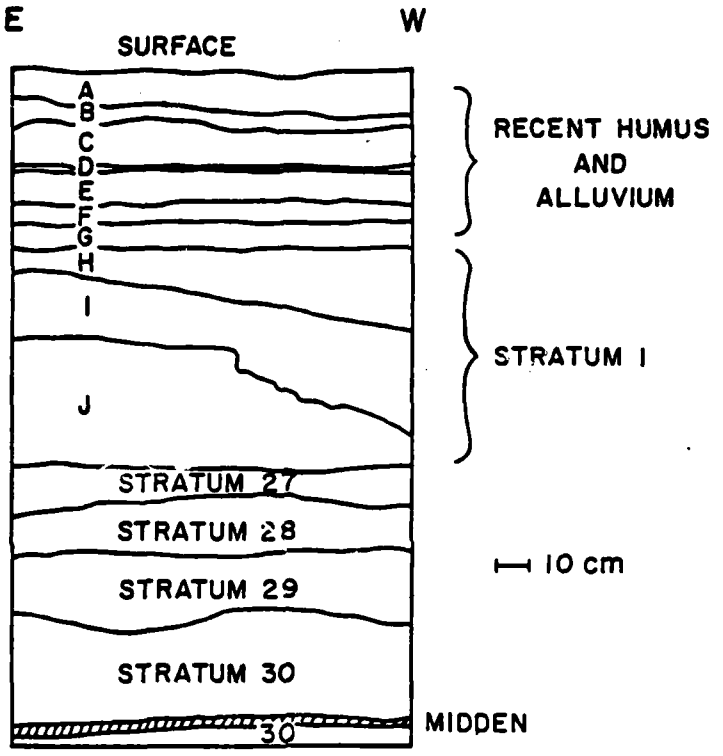


Figure 28. South profile of E-W Trench 3, Section 3.

Chapter 5

DISCUSSION OF THE COLLECTIONS

by Neal L. Trubowitz

Collections made thus far from the site amount to 7,370 objects (Table 3), not including soil samples (see below). Aboriginal ceramics were the most common material recovered, with daub constituting 50% of the collection and pottery sherds comprising 24%. Lithics, bone, historic debris, a few pieces of freshwater mussel shell, and a piece of wood made up the rest of the collections.

Most of the artifacts were found in Test Unit 1, which included Feature 1 (Table 3); 5,008 (68%) objects were recovered there, making it the richest area of midden deposit that has yet been found on the site. Thousands of pieces of daub in that unit indicate that a structure once had stood in the vicinity. Test Unit 5 next to Test Unit 1 also produced a large amount of cultural material. The next largest collections came from the artifact sample area, a probable continuation of Feature 1, and the area between N-S Trench 1 and N-S Trench 2. Both of those collections were picked up from the surface and covered larger areas than the test units.

Historic Material

Only 23 artifacts of historic origin were found in the investigations. Seven rusted nails, which probably came from historic graves, were found in Test Unit 2. A single piece of clear glass was found in Test Unit 4, in the levee fill of Feature 2. This fragment was too small to identify either to method of manufacture or to form. The only other historic material found associated with the levee were the two stoneware sherds found in E-W Trench 4. A similar sherd was found in the surface collection between N-S Trench 1 and N-S Trench 2. Twelve fragments knocked off of tombstones by bulldozers were also found on the north side of the site by the cemetery in Test Units 1 and 2 and the surface collection made in that area. All of this material probably dated no earlier than the nineteenth century.

Soil Samples

A total of 37 soil samples were taken from the different strata and features encountered in the course of the field research. These samples were analyzed for pH, organic content, and other chemical tests at the Soil Testing and Research Laboratory of the Agronomy Department, University of Arkansas, Fayetteville (Table 4).

Vegetal Remains

In addition to the soil samples collected for chemical analyses, one soil sample was collected from Feature 1 in Test Unit 1 for fine water screening. This sample most likely will reveal vegetal material but the investigation is not complete at this time. The only other collected vegetal material was a piece of wood found in Test Unit 1; its genus and species have not been identified.

Animal Remains

Nine pieces of shell and 671 bone fragments were found in the surface collections and

Table 4. Soils analysis of samples collected in the June 1980 tests

Field Sample Number (80-1108-)	Unit Designation	Location	pH	Organic Matter % O.M.	Parts per million lb/A P	lb/A K	lb/A Ca
10	W Muck Ditch	TU1 Fea 1	7.8	0.7	56	100	2450
11	W Muck Ditch	TU1 Fea 1	7.9	0.9	62	120	2700
12	W Muck Ditch	TU1 Fea 1	7.8	0.9	67	110	2700
17	Postmold 1	TU5	8.1	0.3	81	100	2400
18	Outside PM1	TU5	8.0	0.3	73	120	2400
34	W Muck Ditch	TU1 Fea 1	8.0	0.8	49	120	2700
35	Levee	TU4	7.9	0.5	75	115	2300
36	Levee	E-W Tr 4	7.9	0.6	53	155	2300
37	Caddo Str 1	E-W Tr 4	7.9	0.3	102	130	2500
38	Stratum 1	TU2	8.3	0.2	14	100	2550
39	Stratum 2	N-S Tr 2	8.1	0.5	26	240	2300
40	Stratum 3	N-S Tr 2	8.2	0.2	17	180	2500
41	Caddo IV mid	N-S Tr 2	7.8	0.7	25	220	2500
42	Stratum 5	N-S Tr 2	7.7	0.4	56	185	2450
43	Stratum 6	N-S Tr 2	7.7	0.4	49	105	2200
44	Stratum 7	N-S Tr 2	7.9	0.3	34	100	2350
45	Stratum 8	N-S Tr 2	8.0	0.2	25	90	2200
46	Stratum 9	TU2	7.8	0.9	7	210	3750
47	Stratum 10	TU2	8.1	0.3	8	130	2750
48	Stratum 11	N-S Tr 2	8.2	0.4	6	145	2450
49	Stratum 11	?	8.2	0.4	8	90	3000
50	Stratum 12	TU2	8.2	0.4	6	100	3100
51	Stratum 13	TU2	8.2	0.4	5	100	3000
52	Stratum 14	TU2	8.1	0.4	34	80	1950
53	Stratum 15	TU2	8.0	0.2	28	95	1900
54	Stratum 16	TU2	8.0	0.2	26	110	1700
55	Stratum 17	TU2	8.3	0.2	22	65	1800
56	Stratum 20	TU1	7.9	0.8	65	115	2750
57	Stratum 21	TU1	8.0	0.3	--	105	2400
58	Stratum 22	TU1	8.0	0.3	56	85	1900
59	Stratum 23	TU1	8.0	0.5	59	135	2250
60	Stratum 24	TU4	8.1	0.5	64	75	1900
61	Stratum 25	TU4	8.1	0.3	58	65	1500
62	Stratum 26	TU4	8.0	0.3	57	100	1800
63	Stratum 27	E-W Tr 3	8.2	0.3	14	100	2200
64	Stratum 28	E-W Tr 3	8.1	0.3	12	155	2700
65	Stratum 29	E-W Tr 3	8.0	0.2	15	130	3000
66	Stratum 30	E-W Tr 3	7.6	0.6	32	210	3950
67	Stratum 31	E-W Tr 3	7.7	0.7	37	240	4300

test excavations. These constituted 9% of the material that has been recovered on the site. As with the other categories of remains, most of it was found in Test Unit 1 (Table 3) where the midden apparently was especially rich. All of the bone remains, which are currently interpreted as being from the aboriginal component, were in a good state of preservation. Although the bone has not yet been submitted to specialists for identification and analysis, during the artifact cleaning, deer, turkey, fish remains (such as gar), and human bone fragments were noted.

Lithics

A total of 1,236 lithic artifacts have been recovered, 17% of the collections. Only seven of the worked artifacts (Table 3) were not chipped stone items. The seven exceptions include two polished stones (one of which may have been used for smoothing pottery), two abraders, and two celt fragments (Figure 29). One of the celt fragments was made out of a fine grained gray sandstone (probably Jackfork sandstone), and the other was made out of siltstone. There was no lithic debris from either of these materials, so the celts must have been manufactured somewhere outside the site areas that were collected. The abraders were made of sandstone, and there were pieces of that material among the debitage.

Most of the remaining material was noted to be from local cherts which occur in small to medium size pebbles or cobbles along sand and gravel bars on the Red River. These cherts commonly have a shiny brown cortex with tan to white interiors, with gray interiors also common. Some of these cherts had apparently been subjected to heat as several specimens exhibited potlid fractures and/or a color change in the chert to a red or pink color.

A few pieces of novaculite from the Ouachita Mountains were found in the form of flakes with a waterworn cortex. This material had probably been collected from the river bars along with the other lithics used for chipped stone tools.

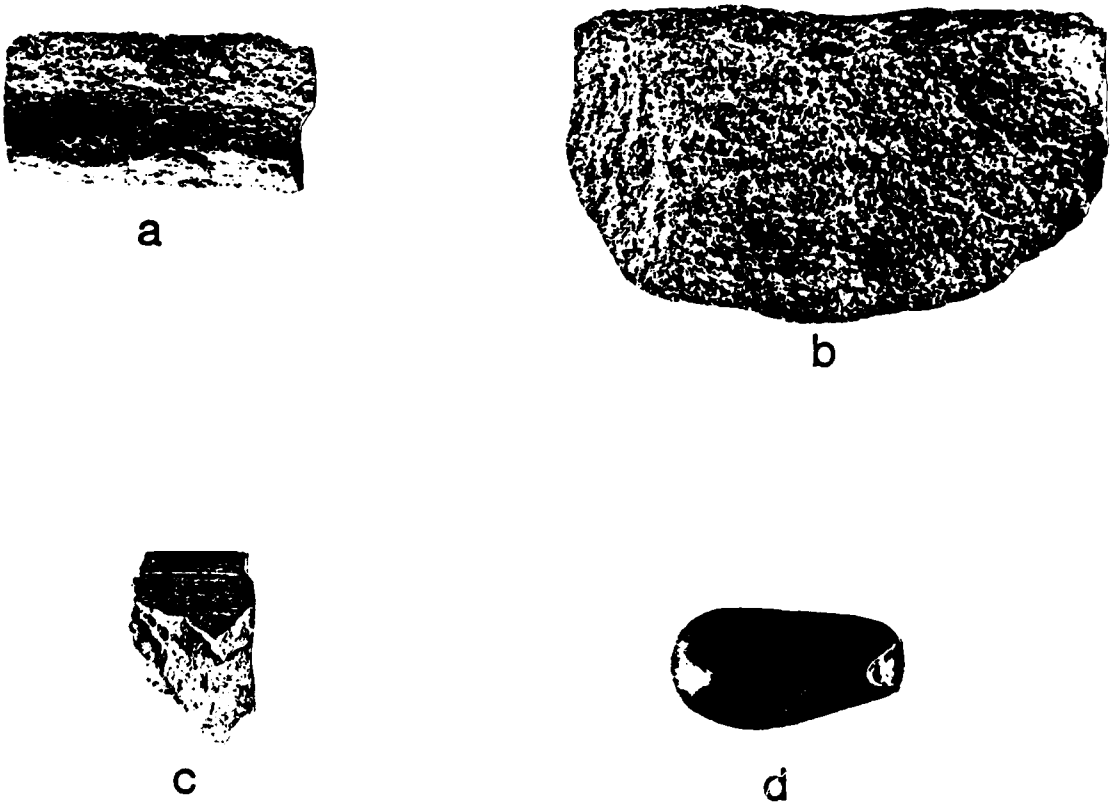


Figure 29. Examples of ground and polished lithics. (a-b) abraders; (c) siltstone celt fragment; (d) polished pottery smoothing tool (full scale)

Of the chipped stone tools there were 96 modified flakes (Figure 30a) as opposed to 14 biface artifact fragments, indicating that bifaces (Figure 30b,c) were a minor part of the lithic industry. Nine of the bifaces have not been identified as to use, but five of them are arrow points or fragments (Figure 30d-g). Two of the points were willow shapes (Figure 30f, g), one was reworked and has not been typed (Figure 30c), another was a triangular Fresno style (Figure 30h), and the last was a side-notched variety of the Reed projectile point type (Figure 30d). Both the Fresno (Bell 1960:44) and Reed (Bell 1958:76) are late arrow point styles that have been associated with Caddoan occupations. The Fresno is the later of the two, extending in its use into the historic period, until it was replaced by triangular metal points.

Although the only analysis of the flaking debris completed thus far was the separation of the worked material from cores and debitage, bifacial thinning flakes were noted, indicating that tool manufacture and/or reduction was taking place on the site.

Daub

Daub was the most common cultural material found providing clear evidence of structures on the site. While the bulk of the daub from the midden was small pieces a few centimeters at most in diameter, large chunks were found in situ associated with Feature 3 (Figure 24). These had clear impressions of plant fibers. Study of these impressions will provide data on the plant species and construction techniques utilized in late Caddoan structures.

Pottery

Pottery recovered from the site is discussed in the following chapter.

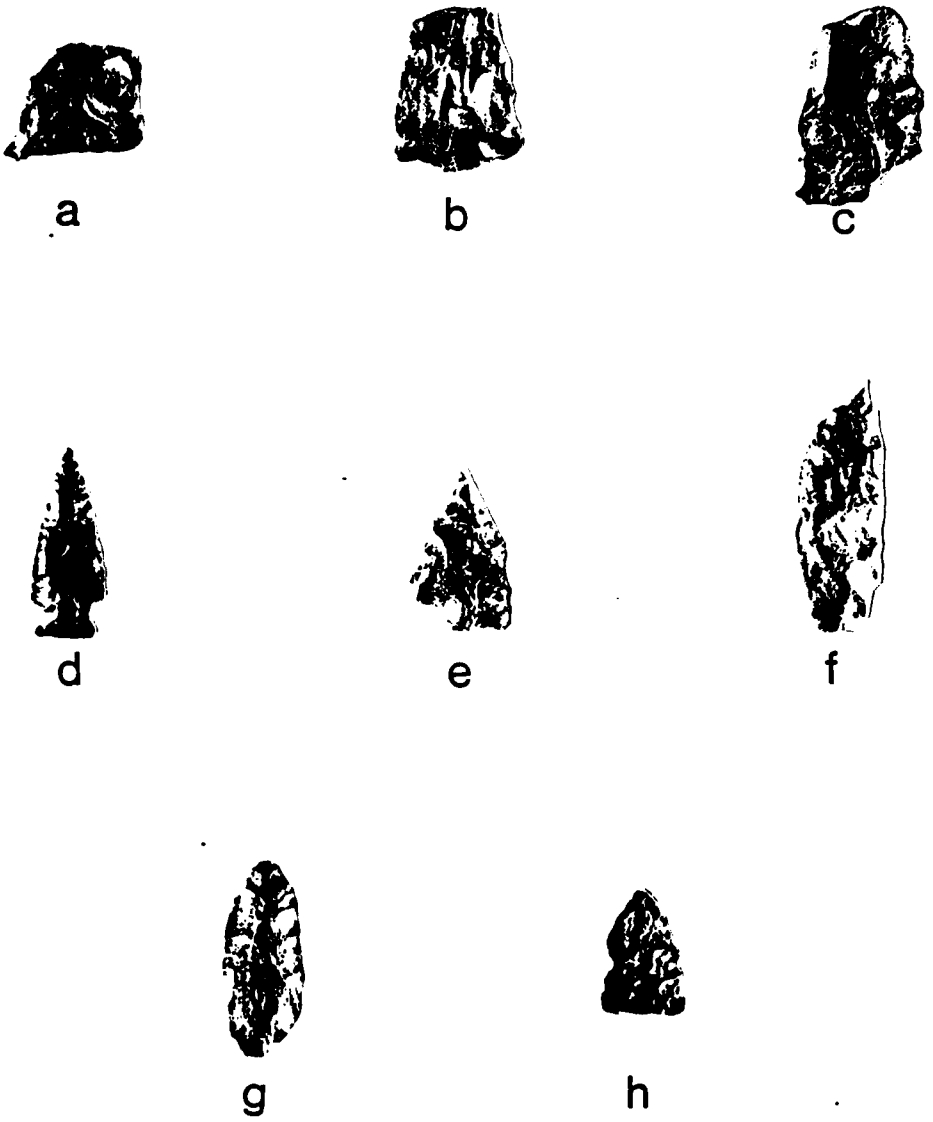


Figure 30. Examples of chipped lithics. (a) utilized flake; (b-c) bifaces; (d) Reed arrow point; (e) reworked arrow point; (f-g) willowleaf-shaped arrow points; (h) Fresno arrow point (full scale)

Chapter 6

THE POTTERY FROM CEDAR GROVE

by Frank F. Schambach

We collected 1,749 pottery sherds from the Cedar Grove site in the course of (1) our surface collections at the time of discovery, (2) a brief test on April 29, 1980 of a disturbed midden area eroding into the river, and (3) the U. S. Army Corps of Engineers funded excavations carried out between June 18 and June 25, 1980.

The collection was classified using the Handbook of Texas Archeology (Suhm and Jelks 1962)--the standard reference for Caddo area ceramic typology. It was possible to classify 1,241 sherds to one level or another (Table 5). There was a residual category of 508 unsortable crumbs.

In Caddo ceramics, unlike Mississippi Valley ceramics, a high percentage of shell temper within various types is considered a reliable marker of eighteenth century Caddo V assemblages (E. Mott Davis 1970:56). Therefore all sherds were examined for shell on fresh breaks under 14X magnification. Where necessary, they were also tested for shell, using dilute hydrochloric acid. Sherds were classified as shell-tempered if (a) they contained visible shell particles, (b) they effervesced upon application of dilute hydrochloric acid, or (c) they exhibited the platy, laminated texture characteristic of sherds tempered with shell that has since leached out, or was burned out in firing.

Table 5. The ceramics from 3LA97

Type	shell	grog	bone	shell	grog	bone
Avery Engraved		1			100	
Belcher Engraved	2	15		12	88	
Belcher Ridged	29	20	1	58	40	2
Cass Appliqued	1				100	
Cowhide Stamped	1	1		50	50	
Foster Trailed-Incised	233	14		94	6	
Glassel Engraved		4			100	
Hodges Engraved		3			100	
Keno Trailed	13	37		26	74	
Natchitoches Engraved	12	3		80	20	
Natchitoches, Hodges, or Belcher Engraved		52			100	
Untyped Coarse Ware	303	89	8	76	22	2
Untyped Fine Ware	44	355		11	89	
TOTAL SAMPLE (1241)	638	594	9	51%	48%	1%
TOTAL FINE WARE (543)				13%	87%	
TOTAL COARSE WARE (698)				81%	18%	1%

The other two temper categories used for this collection were grog temper and bone temper. The grog temper category includes (a) sherds that exhibited particles of ground-up grog and also (b) sherds that showed no visible tempering material. The latter is common in, if not typical of, most Caddo fine wares, where the temper, if any, was ground so fine that it is no longer identifiable.

In the following classification and analysis, a distinction is maintained between fine wares and coarse wares, the latter sometimes called utility wares. This is a standard division in the Caddo ceramic typology (Krieger 1946; Suhm and Jelks 1962; Webb 1959). It is worth maintaining because the types within these two ware categories seem to behave differently in time and space. For example, fine ware types often have wider geographical distributions than coarse ware types. On the other hand they often do not last as long. Fine ware types may be more common in high status contexts or ceremonial contexts than they are in ordinary dwellings at farmsteads. They also sometimes change at different rates, or appear to. In the present case, where we are dealing with ceramic evolution in Caddo IV and Caddo V times, shell temper appears to have spread more quickly through the coarse ware types than the fine ware types.

In general, fine ware types have thin walls, fine paste, well smoothed or polished surfaces, and complex engraved or fine incised designs. They tend to be bowls and bottles rather than jars. Coarse ware types generally have thicker walls, much coarser temper--it is almost always visible to the naked eye--matte or rough surfaces, incised, brushed or punctated designs that are generally quite simple, and the main vessel shape is the jar.

The fine wares in this collection amounted to 543 sherds, or 44% of the sortable sample of 1,241 sherds; 13% were shell-tempered and 87% were grog-tempered. There was one bone-tempered sherd. It probably predates the main component of this site.

The coarse ware sherds totaled 698, or 56% of the sortable sample; 81% were shell-tempered, 18% were grog-tempered and 1% was bone-tempered. The latter, again, probably predate the main component, for reasons given at the end of this section.

In the course of this analysis I examined photographs of 118 whole vessels in the Lemley collection (discussed in Chapter 2) from one or more unrecorded sites on Lester Bend that must have been within 2 or 3 km of this site--if not one and the same with it--on the old Lester Brothers and Sentell plantations. The vessels were typed and the results are presented in Table 1.

Avery Engraved (Figure 31a)

Type Description: Suhm and Jelks 1962:1-3
Sample: One grog-tempered body sherd
Comments: This is the informal, eastern, Belcher phase, low-rimmed variety of Avery Engraved, established and illustrated by Webb (1959:Figure 120c,d)--not the classic high collared, often red-filmed, western Avery Engraved of the McCurtain and Texarkana phases. It was not abundant at the Belcher site, but it shows signs of being so in the Spirit Lake locality, as there are six whole vessels in the Lemley collection from the Lester Brothers Plantation, at least one from the McClure site (Moore 1912:Figure 73) and at least two from the Foster site (Moore 1912:Plate XLII, Figure 109).
With more fieldwork in the Spirit Lake and Boyd Hill localities this will be established as either a formal variety of Avery, or more likely a new type. In either case it should prove to be a late Caddo IV to Caddo V diagnostic.

Belcher Engraved (Figure 31b-g)

Type Description: Webb 1959:120-123; Suhm and Jelks 1962:9
Sample: Belcher Engraved is a fine ware type that includes bottles and bowls. This sample contains five bottle sherds and 12 bowl sherds. Bottles of this type will produce more identifiable sherds than bowls, because of the much larger decorated

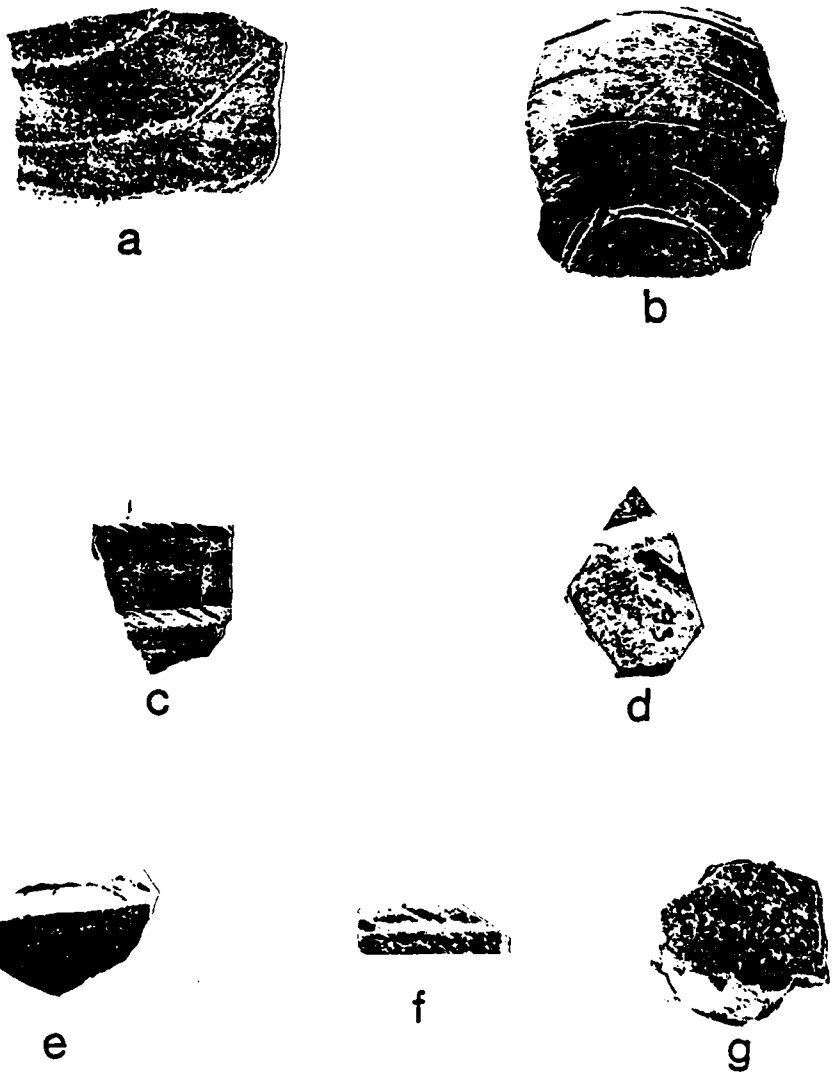


Figure 31. Decorated sherds. (a) Avery Engraved; (b) Belcher Engraved bottle; (c-g) Belcher Engraved bowl (full scale)

area on bottles, so the present sample seems to be weighted significantly towards bowls. Two bottle sherds are shell-tempered. The rest of the sample is grog-tempered.

Comments: Belcher Engraved is considered a good marker type for the "protohistoric Caddo" (Webb 1959:122), or Caddo IV period, and it is considered the fine ware marker type of the Belcher phase. Belcher Engraved bowls appear to intergrade with or evolve into a variety of Natchitoches Engraved bowl that is present in the collections from the Caddo V period Glendora site (Moore 1909:Figures 39,41) and from Moore's late cemetery at the Battle Mound site (Moore 1912:Figure 62). So there is reason to suspect that Belcher Engraved lasted into the Caddo V period.

Belcher Ridge (Figure 32a-d)

Type Description: Webb 1959:136-139; Suhm and Jelks 1962:11

Sample: The sample consists of 29 shell-tempered body sherds, 20 grog-tempered body sherds and one bone-tempered body sherd. Belcher Ridge shares a plain or brushed rim form with several other types so rim sherds of Belcher Ridged vessels cannot be typed unless some of the body decoration also shows on the sherd.

Comments: Belcher Ridged is a marker type for the Bossier and Belcher phases and it appears occasionally as intrusive pottery at Texarkana phase sites. It is a common type in the lower part of the Great Bend region in Arkansas in the Spirit Lake and Boyd Hill localities, but it does not seem to occur often west of Fulton. Increased use of shell tempering is considered a sign of lateness within this type (Suhm and Jelks 1962:11). Fifty-eight percent of this sample is shell-tempered, compared to about 18% of the Belcher site sample (Webb 1959:154) so on this basis we can expect the Cedar Grove sample to be at least late Belcher phase and probably later than the Belcher phase.

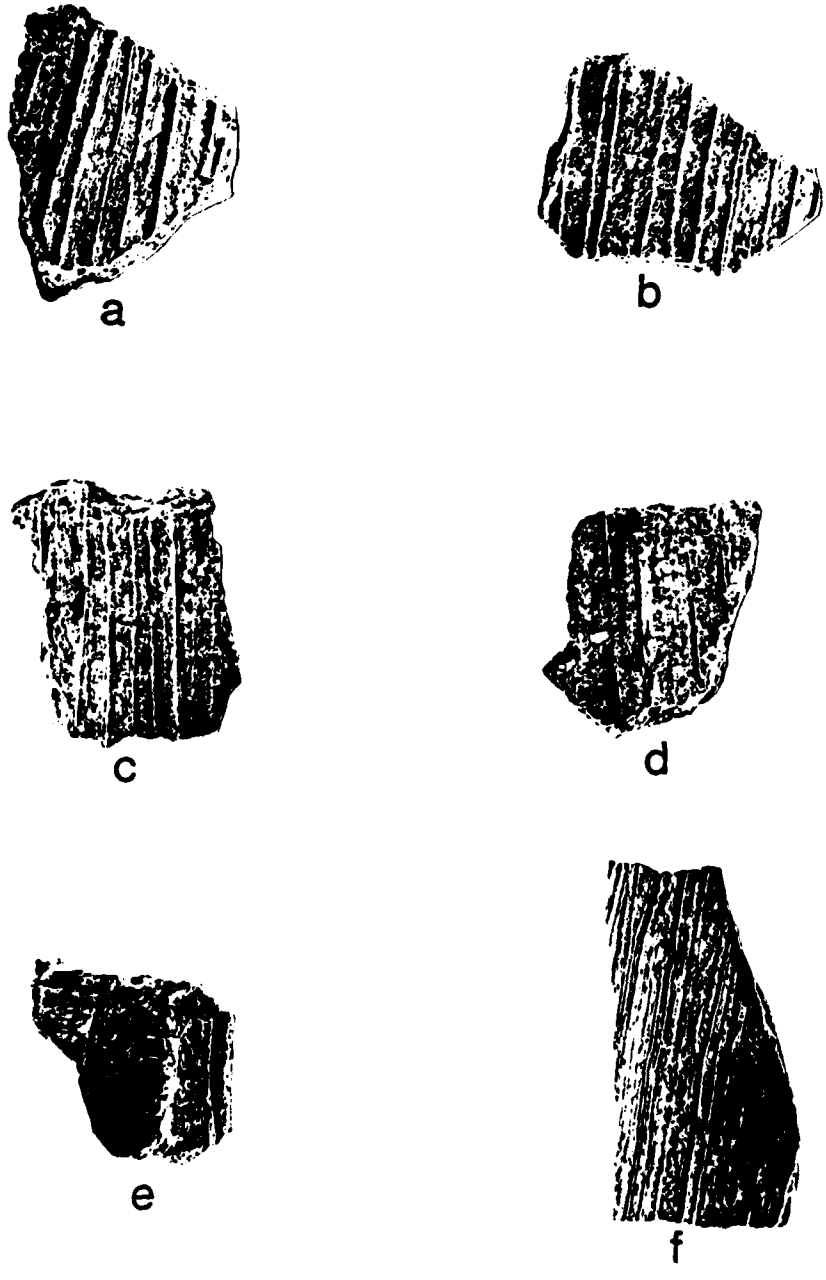


Figure 32. Decorated sherds. (a-d) Belcher Ridged, all shell tempered; (e) Cass Appliqued; (f) brushed body sherd of Cowhide Stamped (full scale)

Cass Appliqued (Figure 32e)

Type Description: Suhm and Jelks 1962:25

Sample: One shell-tempered body sherd

Comments: Cass Appliqued is considered a "minor element" in the Caddo IV Titus and Texarkana phases. It also occurs with iron and glass artifacts in the Caddo V Hunt and Clements sites in Cass County, Texas (Suhm and Jelks 1962:25) so there is a good possibility that it will prove to be a Caddo V marker type. It is not recognized in the Belcher phase, but it occurs sporadically in the Great Bend region. There are three vessels of this type in the Lemley collection from the Lester Brothers Plantation at Lester Bend so its appearance in the Cedar Grove collection is no surprise.

Cowhide Stamped (Figure 32f)

Type Description: Webb 1959:128-131

Sample: The collections contains two body sherds of Cowhide Stamped, one shell-tempered and one grog-tempered.

Comments: This is a panregional type of the Caddo IV and Caddo V periods. A shell-tempered specimen was found with European objects at Old River Landing in the lower Arkansas Valley (Webb 1959:130). Another was found in direct association with European goods at the Greer site, also in the lower Arkansas Valley (Suhm and Jelks 1962:29). There are two whole vessels of this type in the Lemley collection from the Lester Brothers Plantation.

Foster Trailed-Incised (Figure 33a-d)

Type Descriptions: Webb 1959:131-133; Suhm and Jelks 1962:43

Sample: There are 247 rim and body sherds of this type. This sample breaks down into 79 shell-tempered rim sherds, 154 shell-tempered body sherds, 9 grog-tempered rim sherds and 5 grog-tempered body sherds. Rim sherds of this type are distinctive and easily sorted. Body sherds could be confused with body sherds of Karnack Brushed-Incised (Suhm and Jelks 1962:85), but Karnack, as it is presently known, is exclusively a grog-tempered type so that is not a serious problem with this particular sample.

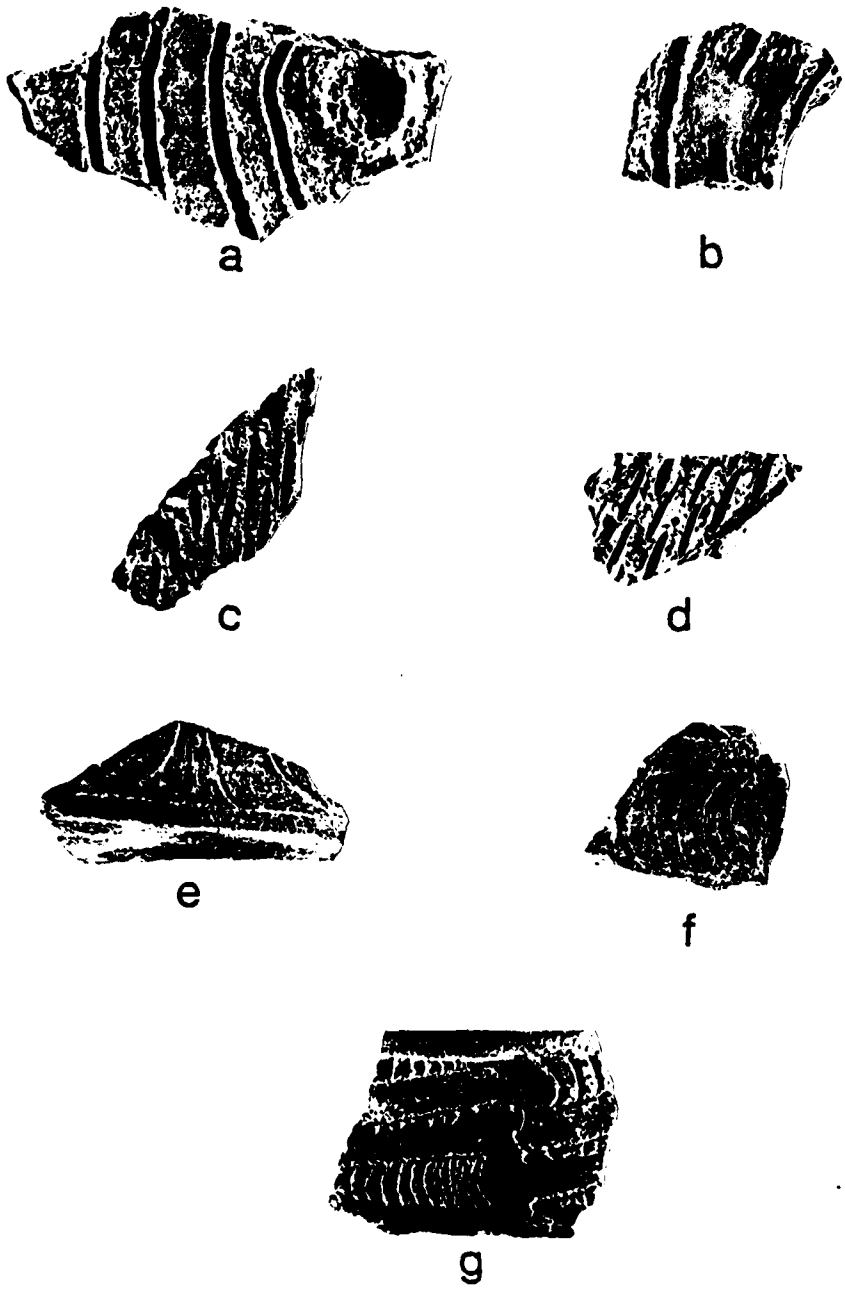


Figure 33. Decorated sherds. (a-b) Foster Trailed-Incised body sherds; (c-d) Foster Trailed-Incised rim sherds; (e-g) Glassell Engraved (full scale)

Comments: Foster Trailed-Incised is generally considered a Caddo VI period type. Suhm and Jelks (1962:43) comment that it is "not known in historic sites," but that is an error since one vessel has been identified at the Glendora site, which has historic trade goods (Webb 1959:131-133; Moore 1909:Figure 14, Vessel 256). Foster Trailed-Incised is considered one of the diagnostic coarse ware types of the Belcher phase, but it is not exclusive to that phase or to the Great Bend region. It is also very common in the Middle Ouachita region and the Felsenthal region. There is a pronounced difference in temper between this sample, which is 94% shell-tempered, and the Foster Trailed-Incised at the Belcher site which is "preponderantly clay-tempered (Webb 1959:131). Perhaps there is a shell-tempered variety of Foster Trailed-Incised that may prove to be diagnostic of the Caddo V period in the Great Bend region while grog-tempered Foster Trailed-Incised is confined to the Caddo IV period.

Glassell Engraved (Figure 33e-g)

Type Description: Suhm and Jelks 1962:53

Sample: This type is supposed to include both bottles and bowls; but Webb suggests that bottles should be omitted (1959:141). There are only bowl sherds in this collection, four of them, all grog-tempered.

Comments: The classification of these sherds as Glassell is arbitrary and will not last. Bowls with this identical design and shape are distributed among three types in the Caddo ceramic typology: Glassell Engraved (Suhm and Jelks 1962:Plate 27D,G); Hodges Engraved (Suhm and Jelks 1962:Plate 38D,G); and Taylor Engraved (Suhm and Jelks 1962:Plate 75I,L). Obviously there is a new type here that needs to be parsed out of the existing descriptions. Cedar Grove will probably supply the necessary data, since, in addition to the sherd sample, there are four bowls of this type in the Lemley collection from the Lester Brothers Plantation. Suhm and Jelks have suggested a Caddo V placement for Glassell bowls of this shape and design (1962:53).

Hodges Engraved (Figure 34a)

Type Description: Webb 1959:123-128; Suhm and Jelks 1962:73-76
Sample: Two bowl sherds, one bottle sherd; all are grog-tempered.
Comments: This is an important Caddo IV period type of the Belcher phase in the Great Bend region and of the Mid-Ouachita phase in the Middle Ouachita region. As Webb (1959:126) points out, it lasted into the "Glendora focus," or, in current terminology, the Caddo V period.

Keno Trailed (Figure 34b-f)

Type Description: Webb 1945:64-67; Webb 1959:133-136; Suhm and Jelks 1962:87
Sample: There are 47 body sherds of bottles (neck and rim sherds of Keno Trailed bottles are untypable because they are plain) and three sherds of beakers, a rare vessel form in this type. Twelve of the bottle sherds are shell-tempered; 35 are grog-tempered. One beaker sherd is shell-tempered; two are grog-tempered.
Comments: Keno Trailed is considered a type of the very late Caddo IV period and the Caddo V period (Webb 1945:64). It has been found in indirect but probably valid association with European artifacts at the Rosebrough Lake site in the Great Bend region (Miroir et al. 1973:119-120), at the Keno and Glendora sites in the lower Ouachita Valley in Louisiana, and at the Douglas and Greer sites in the lower Arkansas Valley (Webb 1945:67-68; also see Moore 1909, 1912). In the Middle Ouachita and Felsenthal regions, where it is quite common, Keno Trailed frequently occurs without trade goods, but always at late sites presumably of the Caddo IV and V periods. Keno Trailed is quite rare in the Great Bend region; here it may be a better marker for the Caddo V period than it is in the Middle Ouachita and Felsenthal regions.

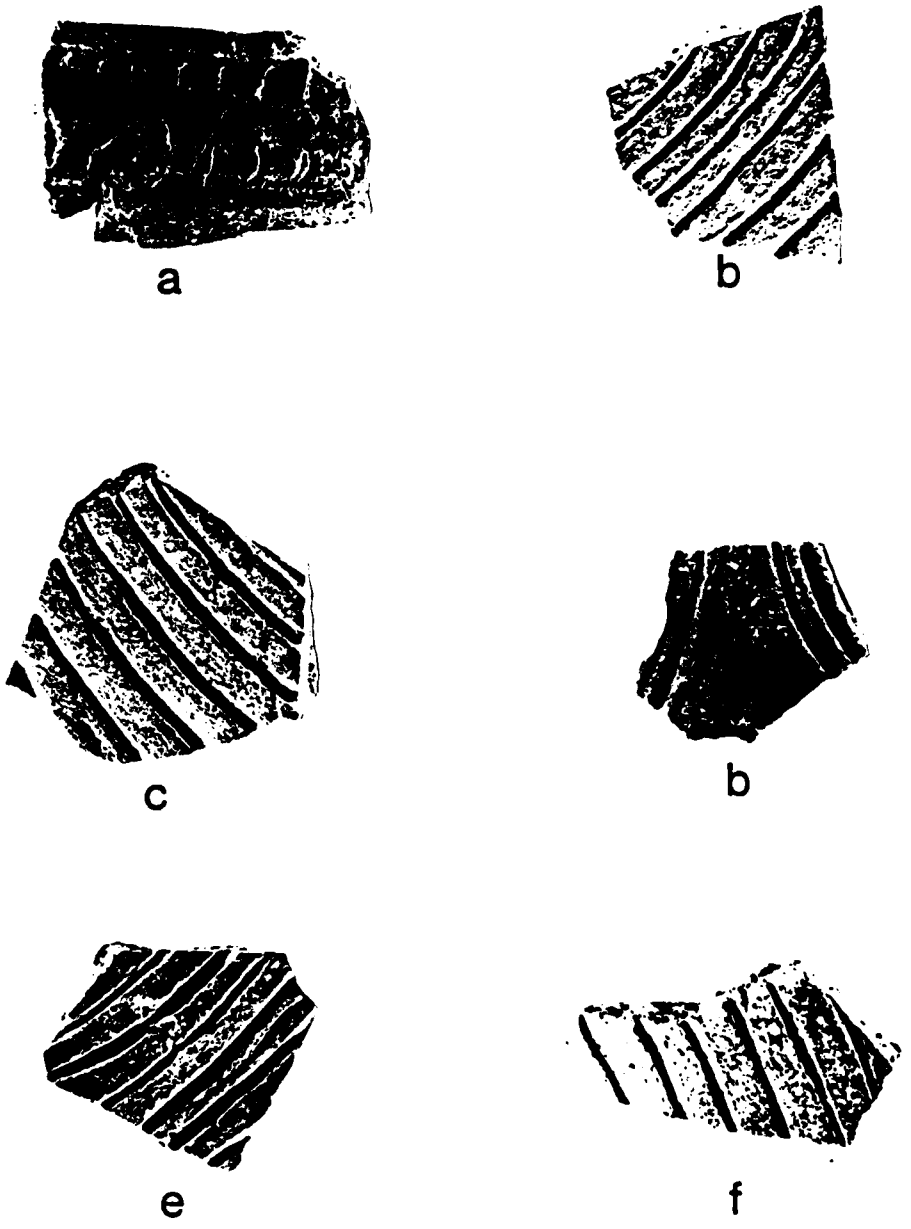


Figure 34. Decorated sherds. (a) Hodges Engraved; (b-f) Keno Trailed (full scale)

Natchitoches Engraved (Figures 35c-f and 36a-i)

Type Description: Webb 1945:63-70; Suhm and Jelks 1962:113

Sample: Two shell-tempered rim sherds, 10 shell-tempered body sherds, 3 grog-tempered body sherds

Comments: This is an irregular type in the Caddo ceramic typology in that it is the only fine ware type where shell tempering is used as the basis of a type distinction. By definition Natchitoches Engraved is shell-tempered and this is the final distinction between it and Hodges Engraved, a type it intergrades with completely in vessel shape and design (Suhm and Jelks 1962:113). The value of this distinction has always been questionable since temper is notoriously difficult to determine in fine ware, and no one really knows what the temper is in the type specimens in the Moore collection from the Glendora site. A neglected statement by Moore (1909:30) implies they may be grog-tempered: "Shell tempering, though present at Glendora, is not found in its earthenware of highest grade." It is even more questionable now that two identical Natchitoches Engraved bowls have been found at Rosebrough Lake in a grave with glass beads, and one vessel is shell-tempered while the other is "grit" tempered (Miroir et al. 1973:Figure 3). Apparently, Natchitoches Engraved, like other late Caddo fine wares, was not always shell-tempered, or if it was, the shell is not always detectable in the finer pastes. Regardless, shell-tempered Natchitoches Engraved is generally considered the prime diagnostic of the Caddo V period (Webb 1945:63; Suhm and Jelks 1962:113; E. Mott Davis 1970:56). Pending the discovery of eighteenth century French trade goods at Cedar Grove it is our most reliable marker for the Caddo V period. Where it is found, trade goods should be present.

Natchitoches Engraved, Hodges Engraved, or Belcher Engraved

Type Description: See above.

Sample: Fifty-one sherds, one body sherd; all grog-tempered

Comments: These types intergrade so it is impossible to assign small sherds or certain sherds not showing particular diagnostic traits to a specific type even though it is obvious that they belong to one of this group.

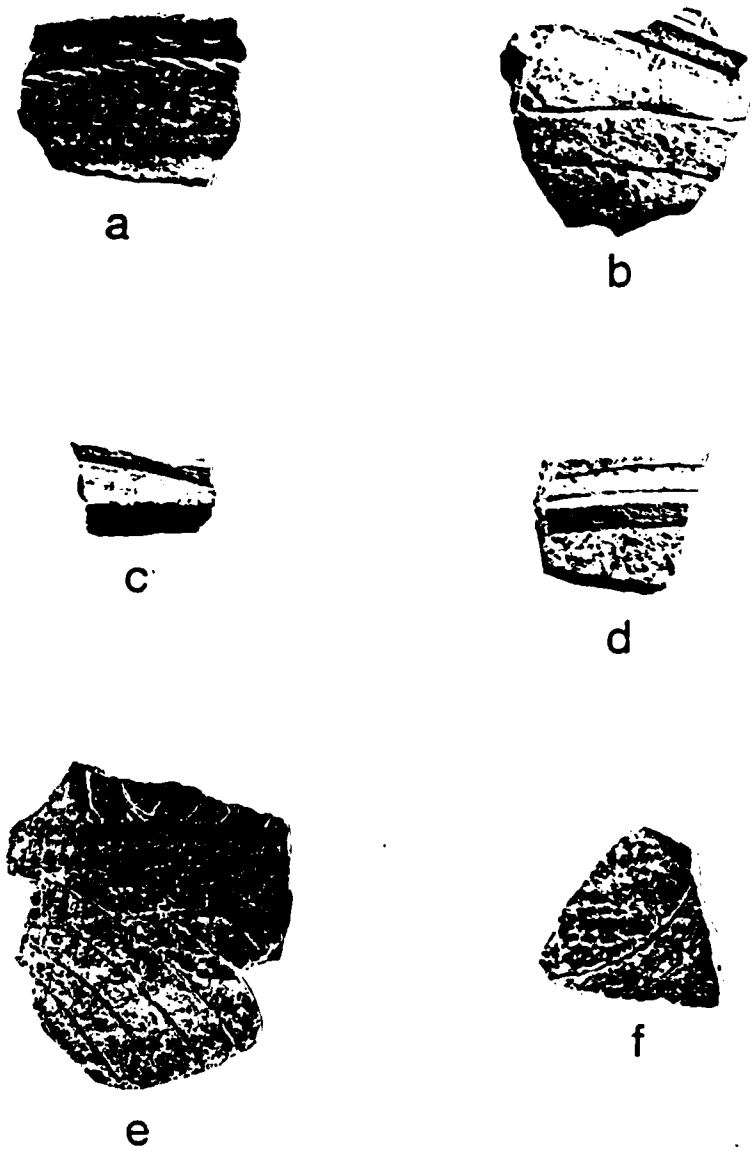


Figure 35. Decorated sherds. (a-f) Natchitoches Engraved, specimen b is grog tempered; all others are shell tempered (full scale).

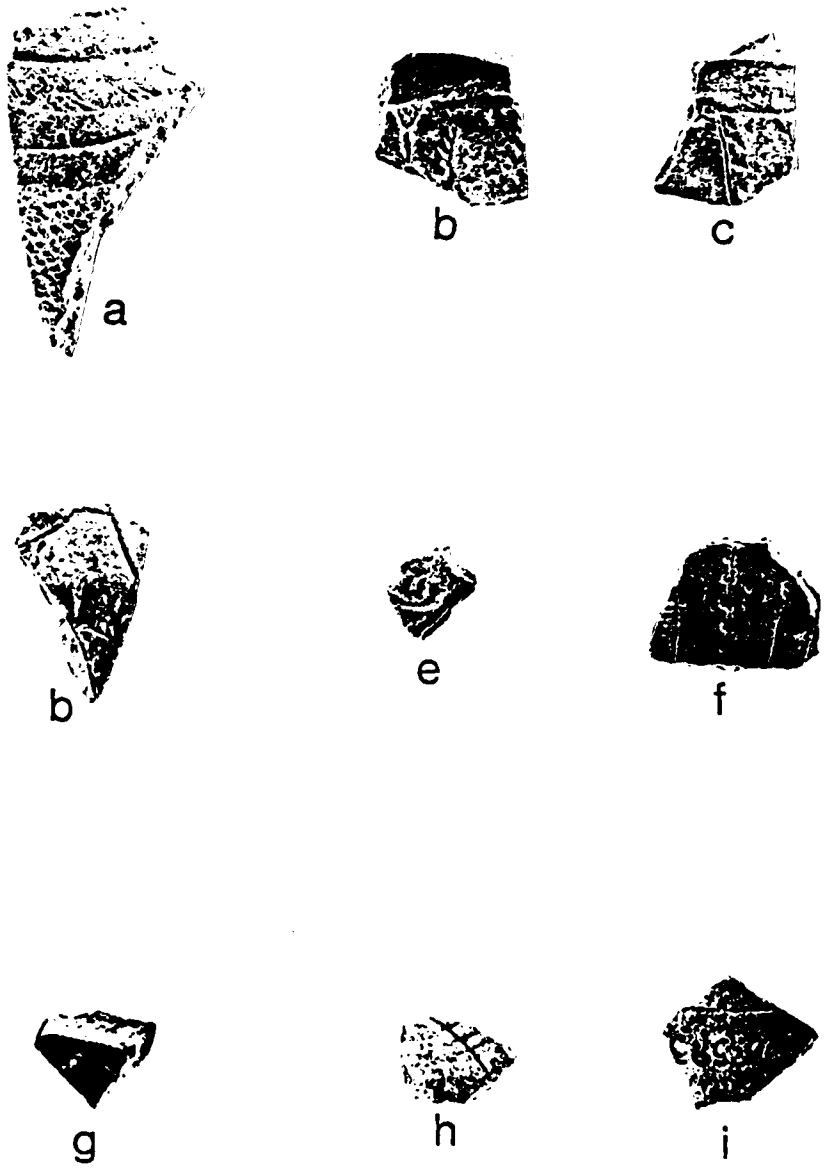


Figure 36. Decorated sherds. a-f, Natchitoches Engraved, all shell tempered (full scale).

Untyped Fine Wares

This sample contains 399 untyped fine ware sherds, 44 of them shell-tempered and 355 grog-tempered. The majority are from vessels of the types described above. This collection breaks down into the following groups.

a. plain rims and necks of bottles: Six sherds, all grog-tempered. These are most probably from Belcher Engraved or Hodges Engraved bottles. Both types have plain necks exclusively.

b. plain body sherds: A total of 363, of which 321, or 88% are grog-tempered and 44, or 12.7% are shell-tempered, and one is bone-tempered. These are probably all bottom sherds from bowls and bottles of the named types described above.

c. plain rim sherds: Thirteen grog-tempered and three shell-tempered. The types Avery Engraved and Belcher Engraved include varieties of bowls with upright plain rims (Suhm and Jelks 1962:Figure 1B, Figure 5A). These rims are probably from such bowls.

d. untyped punctated incised: There is one grog-tempered sherd in this category (Figure 37a). It is noteworthy because it belongs to an unrecognized local decorative category that is represented by three vessels in the Lemley collection from the Lester Brothers Plantation. This appears to be a local variety of Owens Punctated (Phillips 1970:149-150) a type frequently found with the Caddo V types Natchitoches Engraved and Keno Trailed on late sites in the Ouachita Valley.

e. untyped red painted curvilinear incised: One sherd, grog-tempered (Figure 37c).

f. untyped red slipped: One sherd, shell-tempered. Sherds with this combination of attributes are regarded as late, probably Caddo V in this region.

g. untyped incised: One sherd, shell-tempered, with a checkerboard design similar to Dunkin Incised (Suhm and Jelks 1962:Plate 19E). It is not that type however because of the shell tempering. It belongs to a rare and unrecognized variety of Cowhide Stamped that until now has only been seen at the Meador Farm site, a very late site in the Middle Ouachita region that has other ceramic similarities with the Cedar Grove site. We may be able to define this variety with more work at Cedar Grove (Figure 37b).

h. unclassifiable decorated: Twenty-five sherds, all grog-tempered. These are sherds that do not show enough decoration to be assigned to any type (i.e., a single engraved line, etc.).

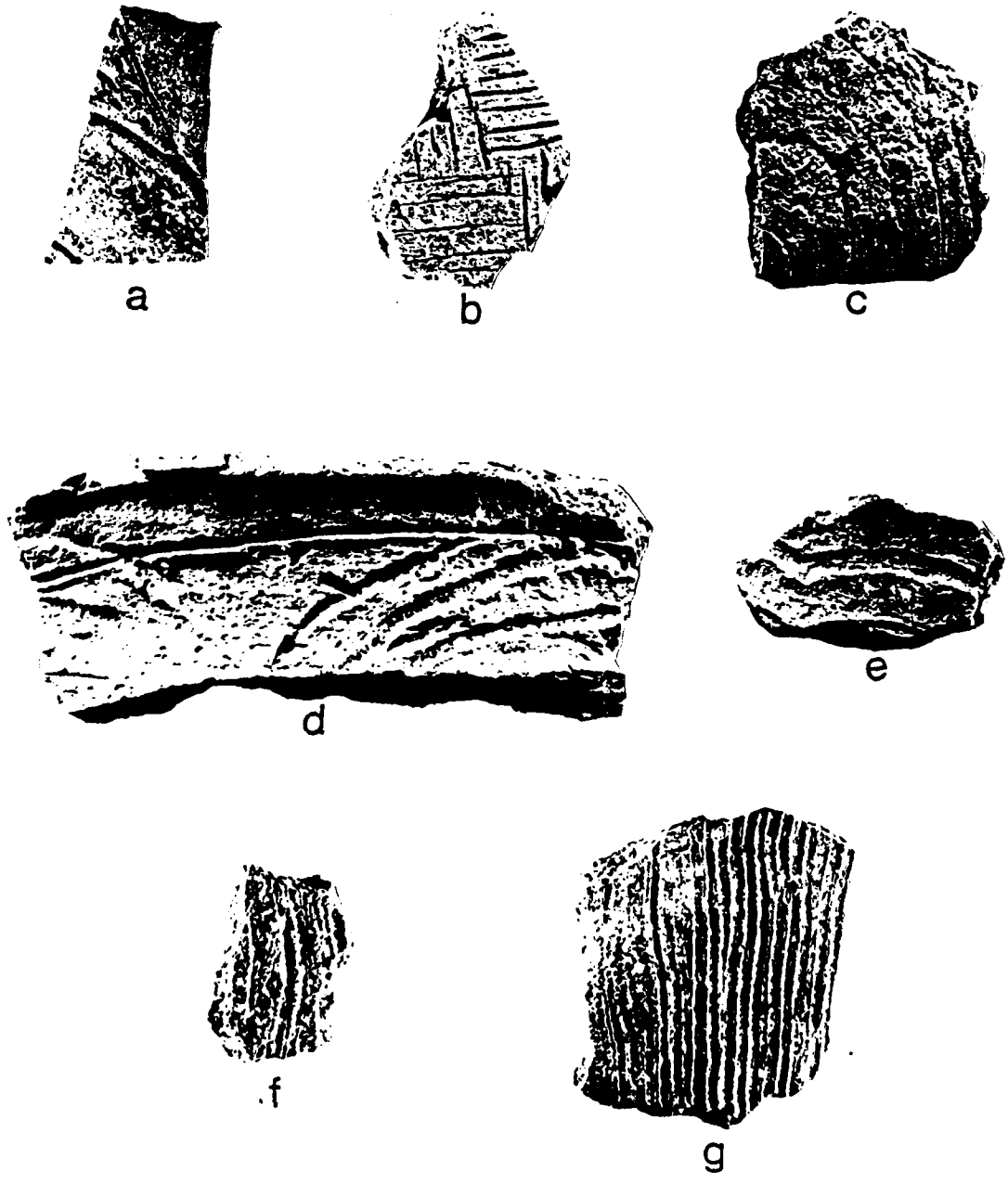


Figure 37. Untyped decorated sherds. (a) punctated-incised; (b) incised, shell-tempered; (c) red painted curvilinear incised; (d-e) incised, shell-tempered; (f) grog-tempered brushed, possibly Bossier Brushed; (g) shell-tempered crushed (full scale)

Untyped Coarse Wares

This sample contained 303 shell-tempered sherds, 89 grog-tempered sherds and 8 bone-tempered sherds. It breaks down into these categories.

a. plain rims: Ten grog-tempered, nine shell-tempered. Most of these are probably from Belcher Ridge vessels. The very small number of plain rims suggests there are no plain utility types in the Cedar Grove assemblage.

b. plain body sherds: Shell-tempered, 274; grog-tempered, 52; bone-tempered, 8. Most, if not all, of these sherds are from the plain lower portions of Belcher Ridged and Foster Trailed-Incised jars. Some Foster jars have completely plain bodies. The eight bone-tempered sherds, all from Unit 32, are probably from a vessel or vessels of some other type.

c. untyped brushed body sherds: Three shell-tempered (Figure 37g); 23 grog-tempered (Figure 37f). These are most probably from vessels of the type Karnack Brushed-Incised, a Belcher phase type that intergrades with Belcher Ridged (Suhm and Jelks 1962:85).

d. untyped brushed rim sherds: Two sherds, both shell-tempered. These are probably from either Belcher Ridge or Karnack Brushed-Incised vessels. Vessels of both types occasionally have brushed rims.

e. untyped incised: Three shell-tempered body sherds; five grog-tempered body sherds. Most of these are probably from Foster Trailed-Incised vessels. One unfamiliar design is suggestive of a possible new shell-tempered type (Figure 37d,e).

f. unclassifiable decorated: Four grog-tempered rims, 14 shell-tempered body sherds, 18 grog-tempered body sherds. These are sherds with too little design showing to be assigned to any type.

OBSERVATIONS AND CONCLUSIONS

Component 1 (Caddo IV)

The small collection of 12 sherds from the layer of midden in E-W Trench 3, Section 3 differs from the rest of the collection (a) in lacking shell temper and (b) in being 64% bone-tempered (9 out of 12 sherds) whereas bone tempering is virtually absent in the main collection. The bone-tempered specimens included eight plain coarse ware sherds and one plain fine ware sherd. This diminishes but does not remove the obvious possibility that this small sample has been skewed by the presence of a single aberrant vessel.

The three remaining sherds, all grog-tempered, include one Foster Trailed-Incised rim, one Belcher Engraved bowl fragment and one brushed body sherd (Figure 37f).

The types Foster Trailed-Incised and Belcher Engraved, plus the bone tempering, the grog tempering and the absence of shell tempering indicate a very early Belcher phase assemblage of the late Caddo III to early Caddo IV periods. The resemblance would be enhanced if the brushed grog-tempered body sherd (a combination of attributes not present in the main collection) was classified as Bossier Brushed (Webb 1963:171) as it probably could be.

This cultural and temporal placement is consistent with the context from which the sample was obtained, namely a deeply buried midden, about 2.9 m down, in an area east of the main body of the site. There is about an 80% probability that this sample represents a distinct early component dating to about A.D. 1500. It probably ties in with the main period of occupation and activity at nearby Battle Mound.

Component 2 (Caddo V)

The remainder of the sample, all from the main part of the site and obstensibly from a single occupation zone, represents a very tight ceramic assemblage indicating occupation by a single cultural group over a short time span, probably less than 100 years. This assemblage is characterized--and dominated--by the fine ware types Keno Trailed, Natchitoches Engraved, Hodges Engraved and Belcher Engraved and by the

coarse ware types Foster Trailed-Incised and Belcher Ridged. The minor fine ware types are Glassell Engraved, Avery Engraved, and Cowhide Stamped. The only minor coarse ware type is Cass Applique. The minor types are consistent with this assemblage and do not appear to represent additional occupations. The small number of plain rims in this assemblage suggests that most of the body sherds in the plain coarse ware and plain fine ware categories are from vessels of the named types just listed. Plain pottery does not seem to have been significant in this assemblage.

With one exception, there are no apparent shifts in pottery types from area to area on the main part of the site even with our present small and very uneven ceramic sample. There is, however, a noticeably higher incidence of shell temper within these types in the pottery from the "artifact sample area." This is the only place shell-tempered Keno Trailed and shell-tempered Belcher Ridged appear in quantity. It is also the only place Natchitoches Engraved has been positively identified. These differences could mean that this was the most recently occupied portion of the site--assuming (a) that Natchitoches Engraved is not present elsewhere and (b) that the use of shell temper increased through time. On the other hand, this category represents the second largest sample on the site (only Test Unit 1 produced more material), with 308 sherds or 25% of the total site sample, so, obviously, there is a high probability that the differences we now see are only due to differences in sample size.

Temporal place of Component 2

I assume, pending further excavations, that this is a single component collection and not, as it obviously could be, a mixture of Caddo IV and Caddo V assemblages. Granted this assumption, the presence of Natchitoches Engraved pottery, the high percentage of Keno Trailed pottery, and the very high percentage of shell temper (13% of the fine wares, 81% of the coarse wares, and 51% of the total sortable samples) all clearly indicate a Caddo V period, eighteenth century placement for this collection. The fact, noted in the preceding type descriptions, that every named type is known or suspected to have extended into the Caddo V period corroborates this time placement.

Phase placement of Component 2, the Chakanina phase

This collection will not fit the Belcher phase, because the Belcher ceramic assemblage lacks Natchitoches Engraved, has little Keno Trailed, and has a low percentage of shell temper--less than 20% overall (Webb 1959:154).

The only extant Caddo V phase for the Great Bend region is Williams's Little River phase, a unit originally based on documentary rather than archeological evidence, and "ethnographically identified with the Kadohadacho confederacy as documented historically" (Williams 1964:563). Williams suggested that the main components would be the five major villages of the Kadohadacho confederacy: the Nanatsoho, Upper Natchitoches and Upper Nasoni villages located on the south side of the Red River in Bowie County, Texas, and the two Kadohadacho villages located on the north side of the Red River in Arkansas.

The Little River phase has now been linked in print with the Rosebrough Lake-Hatchel-Mitchell-Moores group of sites in Bowie County, Texas (Hoffman 1970:176). These, in turn, have been linked convincingly with the Upper Nasoni village, as discussed earlier in this report (Wedel 1978).

Save for the shared presence of the panregional Caddo V marker types Keno Trailed and Natchitoches Engraved, the ceramic assemblages from these sites differ completely from that at Cedar Grove site. The core types in the Rosebrough Lake-Hatchel-Mitchell-Moores collection appear to be: Avery Engraved, Simms Engraved, Barkman Engraved, Emory Engraved, Nash Neck Banded and McKinney Plain--all carry-overs of the Caddo IV Texarkana phase. The core types in the Cedar Grove collection are carry-overs of the Caddo IV Belcher phase: Belcher Engraved, Belcher Ridged, Foster Trailed-Incised and Hodges Engraved. It begins to appear that, thanks to the nearly infinite variability of Caddo pottery, tribal differences at the historic level are actually reflected in prehistoric ceramic assemblages, even when the groups were as closely related as the Nasoni and the Kadohadacho.

These differences are sufficient to justify the restriction of Williams's Little River phase to the emerging assemblage. This will be called the Chakanina phase. Its diagnostic pottery types are the panregional marker types of the Caddo V period, Natchitoches Engraved and Keno Trailed-Incised. The core pottery types in the Chakanina assemblage are shared with the preceding Belcher phase: Belcher Engraved, Belcher Ridged, Foster Trailed-Incised and Hodges Engraved. The coarse ware types Foster Trailed-Incised and Belcher Ridged are at least 50% shell-tempered and may be 90 to 100% shell-tempered in very late assemblages. This is an increase from less than 20% shell-tempered in Belcher phase assemblages. Other pottery types are Cass Appliqued, Glassell Engraved and Webb's (1959:142-143) eastern variety of Avery Engraved.

Cultural placement of the Chakanina phase

Many years ago, on sound historical and geographical grounds, Webb postulated a connection between the Belcher phase of the Caddo IV period and the Kadohadacho (or Cadodacho) who according to "all historic records of the contact period . . . maintained control of that stretch of Red River from just above the Fulton Bend to the vicinity of present Shreveport" (Webb 1959:2). The Cedar Grove ceramic assemblage, the new Chakanina phase, goes a long way towards confirming that connection. Now all that is lacking to close the gap between history and prehistory is an eighteenth century date for this assemblage, preferably based on both a variety of chronometric techniques and on European trade goods of known age. That, of course, is one of the major objectives of future work at the Cedar Grove site.

The ceramics themselves seem to present a clear--and entirely expectable--picture of an uninterrupted evolution of the Belcher phase ceramics into Caddo V Chakanina phase and, presumably, Kadohadacho ceramics. The two panregional types Keno Trailed and Natchitoches Engraved are added to a strong Belcher assemblage. Shell temper either appears strongly for the first time in Belcher phase types such as Belcher Ridged, or increases in frequency in others such as Foster Trailed-Incised. There is a seemingly gradual spread of shell temper through the whole Belcher assemblage. There is a mixing of old Belcher phase modes with new Caddo V period

modes such as the combination of Belcher Engraved bowl rims with bowl bodies decorated in the style of Natchitoches Engraved.

Chapter 7

RESEARCH DESIGN FOR FURTHER WORK AT THE CEDAR GROVE SITE

by Frank F. Schambach

Assuming our analysis is correct, the key facts about the Cedar Grove site from the point of view of a research design for further work are as follows.

1. It is a site of the Caddo V period, the least studied, least known period in Caddo archeology, and a period completely unknown in the Caddo area in Arkansas.
2. It is one of only two known sites or site clusters of the Caddo V period in the Great Bend region, and the only one that has good research potential.
3. It is the only known site that may be linked with a documented village of the Kadohadacho, one of the two paramount Caddo tribes.
4. With site destruction being what it is in the Great Bend region, we cannot be confident of finding other sites of this period in a good state of preservation, although information obtained here will probably increase our chances of doing so.

In sum, this is a well preserved site of an unknown phase of a virtually unknown period. Therefore research must be directed toward a full range of archeological problems, from the most basic ones of archeological unit definition, to the specific research questions that arise with the discovery of a unique and long sought site on the threshold between prehistory and history.

The reearch questions that we can expect to be able to address with data from the Cedar Grove site are as follows.

QUESTIONS OF UNIT IDENTIFICATION

First and foremost we must confirm the Chakanina phase ceramic assemblage and attempt to round out the phase definition with data on other artifact categories such as stone, bone, shell, antler, wood, bark, cane, vegetable fibers, glass, and metal. This will require good contextual data from pits, graves, and sealed-in house floors, all features we may expect to find or already know to exist at this site.

What is the extent of the Caddo IV occupation? How does it relate to the Chakanina phase occupation?

CHRONOLOGY

Dating is critical, not only to confirm the position of this phase, but to provide an anchor point for the entire great Bend region sequence. At present the radiocarbon chronology for this region is very poor, due to the lack of recent fieldwork. It consists of a suite of 10 dates on the Caddo I period occupation at the Crenshaw site, a single date on the Belcher phase Cox site, referred to earlier, and four dates on Belcher phase levels at the Belcher Mound (Webb 1959:207).

Large suites of both radiocarbon and archeomagnetic samples should be obtained from as many contexts as possible. The latter are particularly desirable because the archeomagnetic method appears to be more accurate than radiocarbon and more likely to provide the very fine dating that is required for modern settlement pattern studies (Smith 1978).

Between 20 and 30 dates of each type would be ideal, in this particular situation. We will probably encounter several structures of various kinds and we will want to date them all to establish contemporaneity.

All carbonized logs from structures must be collected for possible tree-ring dating. We have a very well developed dendrochronology for the historic period in Arkansas and, by chance, one of our earliest dated historic structures, the so-called Lafayette County Jail originally stood within 16 km of the Cedar Grove site. Historically confirmed cutting dates of 1828 have been obtained from logs in this structure (Stahle 1978, 1979). There probably will never be a better opportunity to extend our dendrochronology into the prehistoric era. If it can be done here, we ultimately may be able to extend it far back into the Caddo sequence since large samples of carbonized logs may be obtained from temple mounds at most Caddo ceremonial centers (we know they are present at Battle Mound) and samples are already available from some sites (Schambach 1972).

European trade goods would provide the most reliable as well as the most dramatic evidence of an eighteenth century date and a Kadohadacho connection for this site. Excavation technique must be geared to the recovery of these items, particularly glass trade beads. The excavators must be prepared to lift and preserve fragile metal items.

BIOLOGICAL ANTHROPOLOGY

We expect to find aboriginal graves at this site and the skeletons should be in good condition. Because of the presumed link with the Kadohadacho we will be particularly interested in developing a bioanthropological profile of the population at Cedar Grove. What was the general state of health of the Caddo at this time? What biological and ecological stresses were registering themselves in the bones and teeth of these people? This would also make a good starting point for bioanthropological studies in Caddo archeology in general. At present this field is completely undeveloped, due partly to lack of recent fieldwork and partly to poor bone preservation at sites throughout the Caddo area.

Besides the standard questions we wish to ask regarding the physical and dental characteristics, diseases, genetic abnormalities, injuries, artificial deformations and demographic characteristics of this group, there are specific questions relating to the historic period. The most obvious one is what, if any, European diseases were present? The persistent spread of pottery types and pottery traits from the Ouachita Valley west at this time suggests there may have been population movements as well. Fortunately there are skeletal collections already available from the Ouachita Valley for comparison (Moore 1909). Also it is a matter of history that the Kadohadacho abandoned their great village in the Boyd Hill locality after a massacre by the Osage around 1777 (Williams 1964:549-555), so there is a possibility of finding evidence of that event.

SUBSISTENCE AND ECOLOGY

As Hemmings (1981) points out

> An odd feature of Great Bend archeological work has been a narrow preoccupation with mounds and cemeteries. No good analysis of Caddoan subsistence is possible because few investigators present any data for food remains, preparation or storage facilities, or even extractive tools.

Fieldwork at Cedar Grove will be our first good opportunity to correct this situation. We know that food refuse bone is present at the site and is well preserved. Our tests indicate that there is a great deal of it on the floor of the burned structure we discovered in Trench 4. Food plant remains are almost certainly present as well, possibly in large quantities. In a hasty three-hour salvage effort at a similar burned structure on the nearby Belcher phase Cox site we obtained almost a bushel of carbonized corn on the cob and acorns, just before the site was destroyed by land levelers. Evidently the practice in late Caddo times was to store corn and acorns in the rafters of houses, where it was apt to be carbonized when the structures burned and collapsed.

Thus there is a good chance of finding a full range of data bearing on Caddo food ecology at this site. This will be the first real opportunity to test our hypothesis that the Caddo had a mixed economy that featured a very heavy reliance, as much at 75%, on wild plant foods, primarily acorns. This mixed economy was, we think, one reason Caddo culture continued to thrive in the sixteenth and seventeenth centuries and into the eighteenth century, after Mississippian culture to the east had gone into decline.

This will also be an opportunity to test our hypothesis that, due to the practice of deer ceremonialism, an old and distinctive element of Caddo culture (Schambach 1971a), the Caddo were able to maintain a large deer population through ceremonially based selective hunting techniques. This, we think, was in marked contrast to most other Mississippian groups in the Southeast, who abandoned the ancient Archaic and Woodland period patterns of animal ceremonialism and hunting magic when they took up corn horticulture, and as a result rapidly decimated the animal populations essential to their diets. The largest possible samples of food refuse bones should be collected for what light they can shed on this problem.

Samples of corn from this site would augment those from other late sites in the Great Bend region and provide a firm foundation for a definitive botanical study of the late Caddo corn complex. As Hemmings (1981) points out, other sizable samples of corn and corncobs are already available from the Cox site, the Battle site, the Hatchel site and, surprisingly, from one of the sites in the Lester Bend complex, perhaps this one. The Lester Place specimens have been identified by Cutler and Blake as 12-,14-, and 16-rowed "hard flint or popcorn" (Hemmings 1981). The key questions here are (1) what variation of corn were the Caddo using and (2) how does their corn complex compare with those of Mississippian groups to the east? We suspect there will be differences; specifically that the Caddo may have had drought-resistant varieties from the Southwest that were not used further east.

SETTLEMENTS AND SETTLEMENT PATTERNS

Settlement pattern studies are at once the single most neglected aspect of Caddo prehistory and the key to understanding many of the most important aspects of Caddo culture and social organization.

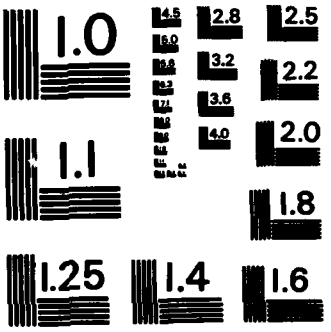
All available historical and archeological evidence indicates that the Caddo settlement pattern in southwest Arkansas at the time of European contact was the dispersed farmstead-vacant ceremonial center type. Furthermore the archeological evidence, although it is scanty, indicates that this pattern lasted throughout the life span of Caddo culture. Apparently, there was never a time when the Caddo of southwest Arkansas lived in large, compact villages of many houses in the Mississippian cultural pattern.

The best picture of a complete Caddo settlement that we are ever likely to get, given the insurmountable difficulties of completely reconstructing a settlement of the dispersed farmstead type, is the Teran expedition map (Figure 3) of the Upper Nasoni village, made in 1691-1692 (Griffith 1954:Frontispiece; Wedel 1978:Figure 2). It shows a settlement consisting mainly of 23 farmsteads dispersed along both sides of the active channel of the Red River and around two oxbow lakes for some 4 to 8 km. At the western end of the settlement was the ceremonial center, a compound containing a mound with a temple on top, and a brush or bark covered arbor near the mound, but no other structures. To the east of the conspicuously vacant ceremonial center, approximately 2.5 km according to the Teran expedition narrative (Hatcher 1932:33) was the compound of the "Caddi," an adolescent male who, considering his age, was almost certainly a chief in the formal anthropological sense of the term.

The farmsteads are shown as small compounds, each consisting of one or two, or, in one case, three houses, one or two storage platforms with beehive-shaped grass thatched covers or roofs, and sometimes a wall-less structure supported by four posts. The latter could have been ramadas or drying racks since both types of structures are documented for historic period Caddo farmsteads (Swanton 1942). The Teran map also shows five structures without storage platforms or ramadas or, it would appear, any surrounding fields. These are located along the two cutoff lakes of the map, and they would appear to be special purpose buildings of some sort.

AD-A121 801 TEST EXCAVATIONS AT THE CEDAR GROVE SITE (3LA97): A LATE CADDO FARMSTEAD O.. (U) ARKANSAS ARCHEOLOGICAL SURVEY FAYETTEVILLE F F SCHAMBACH ET AL. SEP 82 2/2

UNCLASSIFIED PD-RC-82-05 DACW29-80-M-1870 F/G 5/6 NL



Careful documentary studies by Mildred Mott Wedel indicate that this particular settlement was located in the Great Bend region just northwest of Texarkana and that the temple mound shown is quite possibly the Hatchel Mound, located in Bowie County, Texas (Wedel 1978:10).

The Soule photographs (Figures 38 and 39) (Swanton 1942) taken between 1868 and 1872 of a camp of Caddo refugees living in Oklahoma show a farmstead that matches those shown on the Teran map in most details. Between these two documents we have historically based models of both a single Caddo farmstead and a complete Caddo settlement to take to the field to test, and to guide research. The best approach to settlement pattern studies in the Great Bend region will be to concentrate on testing the Teran-Soule model--as we would any other model--by attempting to confirm its basic details in the field. This has never been done. I list below a series of questions and hypotheses, derived mainly from the Teran-Soule model, that can be addressed and tested at the Cedar Grove site.

1. A basic Caddo farmstead consisted of a compound containing one to three houses; one or two storage platforms, and sometimes a ramada. Twenty of the 29 compounds shown on the Teran map contain these structures, so this is what we will most probably find at Cedar Grove.

2. On the Teran map the compound of the Caddi contains no storage platform. Assuming that this was not an oversight of the mapmaker, we may suppose that this was because the Caddi was being fed by the population and did not need to store his own food. There is no storage platform in the temple mound compound either, probably because no one lived there. This suggests that the presence or absence of storage platforms is a key element in ascertaining the function of a particular compound. Compounds without storage platforms were probably special purpose occupations of some sort. These compounds can be expected to show other evidence of limited activity or special activity as compared to a normal compound. Location may be one important factor to consider here. None of the compounds located directly on the banks of the two oxbow lakes have storage bins.

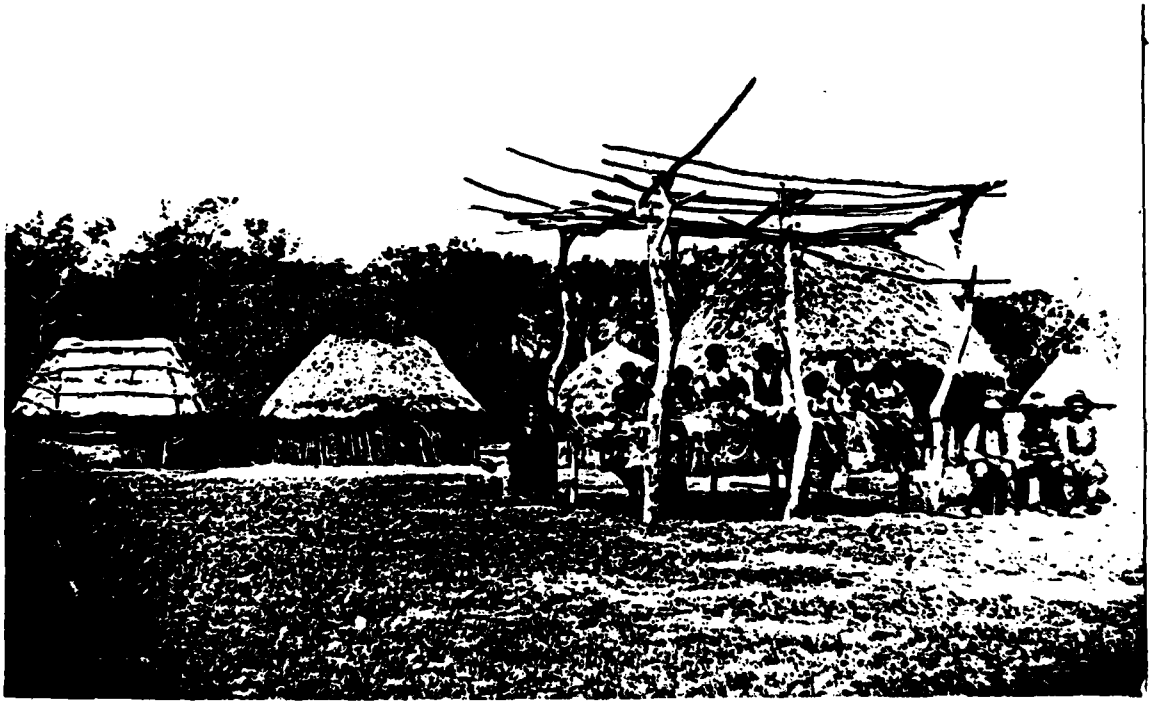


Figure 38. "Long Hat's Camp," a Soule photograph of a Caddo farmstead in eastern Oklahoma, 1868-1872, frontal view (by permission of the Smithsonian Institution)

Figure 39. Long Hat's Camp," a Soule photograph of a Caddo farmstead in eastern Oklahoma, 1868-1872, view from the right front (by permission of the Smithsonian Institution)

Considering the presumed signficance of storage platforms in determining the function of a Caddo compound, it is important to locate and identify these structures at Cedar Grove, if they are present. This has yet to be done on any Caddo site but it should not be difficult. The Soule photographs indicate that the postmold pattern of a storage bin platform will be roughly circular, and about one-third to one-half the size of the postmold pattern of a normal house. This would be between 3 and 5 m. There should be between 40 and 60 posts, spaced about 40 cm apart. The posts should be about 10 cm in diameter, or about one-third the size of the house post logs. In both the Soule photographs and the Teran map the storage platforms are generally located a distance of about one house diameter to the left rear or right rear of the house in a single house compound, although other placements are shown. Therefore, once houses have been located and their orientations determined, the areas to the left rear and right rear of each house should be explored either to find evidence of storage platforms or to make a reasonable case for their absence.

3. On the Teran map the compound of the Caddi is the only one with two brush arbors or ramadas. Presumably this was because people frequently gathered at his compound for various civic and social purposes. Therefore, the presence of more than one ramada at a time at a site may be an indication of a high status compound. Ramadas should be easy to identify archeologically, at least on sites where the post holes are not too numerous and the post hole structure is not too confusing. On the Teran map they are rectangular structures supported by six large posts approximately the size of housewall posts, or a little larger. These should be spaced about 1.5 m apart, to judge from the Soule photographs.

4. Some additional indicators of presumably normal farmstead compounds, as opposed to ceremonial compounds or other types of special purpose compounds--such as men's houses and menstrual houses (Swanton 1942:236)--that we have noticed in surface collections and at the few small excavations made thus far are:

a. Normal farmstead may have a very low incidence of fine ware pottery. At the Montgomery site, a Bossier phase upland site in the Great Bend region at Springhill, Louisiana, fine wares amounted to only 5% of the ceramics (Webb et al. 1977). This is in sharp contrast with the figure of 44% in the Cedar

Grove assemblage. We do not know whether it is due to time differences, cultural differences, social differences, or functional differences.

b. Normal farmsteads exhibit an absence of pipes or pipe fragments that is all the more striking because of their abundance in and around ceremonial activity. They should not appear at normal farmsteads. Conversely, compounds that yield pipes should not have storage platforms and should give other evidence of having been special purpose compounds.

c. Normal farmsteads have a very high incidence of celts and celt fragments, particularly small to medium size flakes that were presumably knocked off during use.

d. If priests or chiefs were being fed by the population and not hunting and fishing on their own, we can expect sites of their compounds to provide an unusually limited range of food refuse bone. Clarence H. Webb has detected this pattern at one Belcher phase site in the Great Bend region in northwest Louisiana where apparently only the best cuts of venison were consumed (personal communication). This pattern should not appear at the site of a compound with a storage platform.

e. An absence of antler as refuse, or as tools, is to be expected in all sites of compounds occupied during the period of deer ceremonialism in Caddo culture. This form of ceremonialism seems to have entailed the placement of all antlers in special piles in or near temples at ceremonial centers. At present it is only documented archeologically at the Crenshaw site for the period A.D. 1000-1100 (Schambach 1971b), but it probably lasted longer since there are descriptions of deer hunting ceremonies conducted by the east Texas Caddo, the Hasinai (Griffith 1954:116). It will be difficult to determine the time span and geographical range of deer ceremonialism in Caddo culture by finding "antler temples" at ceremonial centers. These features are fragile and probably few of them have survived. But we can do the same thing by paying attention to the presence or absence of deer antler at farmsteads. In any case it is worth noting that, given normal bone preservation, lack of deer antler at a Caddo

compound may be due to something other than seasonality.

5. The following are some unanswered questions about compounds, relating to matters about which the Teran and Soule documents contain no information. We should be able to answer some of them, at least to some extent, in the work at Cedar Grove. This will strengthen the Teran-Soule model.

a. Were people buried at normal compounds, at all compounds, at some compounds? If so, where in the compound were they buried--inside the houses or near the houses? Are there age or sex differences between the burials at compounds and those at ceremonial centers? Were infants and small children treated the same as adults? Were males treated the same as females?

b. How large was a complete compound, including its fields? Considering how rapidly flood deposits can accumulate in this region (more than 1 m almost overnight) it is always possible that we will find a silted over compound where ephemeral features such as fields, crop rows, footpaths and yards or other activity areas can be identified and measured.

c. How much rebuilding was done at a compound? How long were compounds occupied?

d. Were all houses the same size and shape, as the Teran-Soule data suggest, or were there functional differences in size and shape?

e. What types of activities were carried out at compounds? Do all normal compounds have evidence of the same range of activities, or can we make a case for certain kinds of craft specialization, particularly in late Caddo times?

Chapter 8
SITE SIGNIFICANCE AND PROPOSED PLAN OF MITIGATION

Frank Rackerby and W. Fredrick Limp

DETERMINATION OF ELEGIBILITY

Chapters 4 through 7 document the scientific value of the the site. We believe that sufficient information has been presented to demonstrate that Cedar Grove is eligible for nomination to the National Register of Historic Places.

Although construction has disturbed the northern periphery, our test excavation demonstrated that the majority of the site still possesses integrity of location. The sealing of the site by flood deposits of the twentieth century has prevented it from being heavily disturbed by modern agricultural practices. There is no evidence that the site was subjected to mechanized plowing prior to its being sealed.

The 1887 Red River Survey map does indicate that the site was then in an area marked as a plantation field so it might have been cultivated by horse or mule-drawn plows during the nineteenth century. However, the excavators did not find any evidence of a developed plowzone at the level of the former ground surface. There is a possibility that some undetected disturbance to surface level features took place prior to the sealing of the areas by recent flood deposits. It is also possible that the area was established early as a plantation cemetery and was never disturbed by the

plow. Lacking any observed disturbance during the test excavations we are assuming a high degree of integrity for the site. At worst the area was cultivated during the nineteenth or early twentieth century, by hand or with draft animals. Damage by such activity is far less severe than by modern day practices.

The relationship of the Caddo IV component within a posited settlement system focusing on the nearby Battle Mound is an important element in the significance of this component at 3LA97. Investigation of the Caddo IV component will permit evaluation of this hypothesis.

Since the Caddo V component is associated with the terminal years of Caddo occupancy in the Great Bend region, 3LA97 may contain evidence of their displacement by the Osage or contacts with French traders and American explorers. Such an ethnohistoric contact site would meet criterion 6(a) for nomination of a site to the National Register of Historic Places as a site which is "associated with events that have made a significant contribution to the broad patterns of our history." There are few things archeological that reflect the broad patterns of our history as much as the disintegration of a Native American culture in the way of European culture.

The historic features and components (cemetery, plantation fields, and levees) also are evidence of events contributing significantly to our nation's cultural patterns. There is no evidence, however, that significant individual(s) are directly linked to the site (criterion 6b).

The criterion under which all components at site 3LA97 are undeniably eligible for nomination to the National Register is 6(d), "that have yielded, or may be likely to yield, information important in prehistory or history."

Since, in the opinion of the Arkansas Archeological Survey, the site is eligible for nomination to the National Register, the adverse impact of continued construction of the Field Revetment must be mitigated. Since parts of the site have already been damaged by construction and the completion of the revetment must take place to stabilize the riverbank, mitigation through data recovery is the only viable option for

the portions of the site that lie in the direct impact area.

RECOMMENDATIONS FOR GENERAL MITIGATION

Presently there are two historic components which require further investigation; these are the nineteenth century levee and the cemetery. They are elements of plantation system life on the Red River and warrant sufficient documentary and archival work to flesh out the tantalizing clues they provide.

Photographs and/or sketches of the tombstones should be made. Census data and other information should be transcribed from the tombstones, and the locations of the graves should be plotted on a cemetery plan. These data should be provided to a project historian who would then conduct an archival search of church, civic, and possibly family records to document the lives of these individuals displaced fromtheir "final resting place" by revetment construction. The relationship of these persons to the Sentell Plantation and the Armour Estate should be investigated. The role of the present Cedar Grove Baptist Church and any historic antecedents should be explained. All mitigation of the historic cemetery can be done without reference to skeletal remains or grave goods. If such information is recorded in the course of disinterment and graves relocation it should be considered as additional, incidental data but is not considered part of any necessary plan of mitigation. If other historic graves are located during the continued archeological excavations, they will be marked and the area avoided until the remains can be removed by parties designated by the Levee Board.

The historic levee, or system of levees, that may exist throughout the site area needs to be fully mapped as it is exposed by the removal of the silt overburden. The relationship of this early American period construction to the Caddo V remains must be fully documented to assess the damage to the prehistoric components.

Additional cross sections and profiles should be taken of the levee. Care should be taken to excavate and record examples of the construction techniques used to provide information on the engineering skills employed by the builders. Historic artifact

inclusions should be studied to determine the date of construction. Any preserved timbers should be evaluated and subjected to dendrochronological analysis. Additional archival work by a project historian should accompany the field excavation of the levee system to document this component at 3LA97.

The Caddo IV component discovered in Trench 3, Section 3, must receive additional excavation to explore its extent. The importance of this component is in its potential relationship to a Caddo IV settlement pattern that involves the ceremonial center of Battle Mound. This component currently is poorly represented (only 12 sherds) and deeply buried (2.9 m below modern ground surface) and was found in only one location. Therefore the Caddo V period may not be widely represented at the site. It does indicate that excavations must be carried out below the Caddo V occupation levels and that some effort must be expended in determining the limits of the Caddo IV component.

But, since time and funds will constrain the recovery of data from 3LA97, most of the mitigation efforts should be directed towards the full documentation of the Caddo V component since it is well represented by a variety of features, possesses a reasonable integrity, and has the potential to become a prehistoric/historic contact "window."

SPECIFIC MITIGATION RECOMMENDATIONS

We understand that time is of the essence for the excavation phase of the mitigation program, while the analysis and report writing phases can proceed at a more realistic pace. Therefore we recommend that certain field procedures be implemented to allow for maximum efficiency in collection material for subsequent analysis.

Recovery Techniques for Archeological Material

We recommend that dry and/or water screening be conducted on soil matrix removed from features and controlled excavation units. The mesh size would vary depending on the nature of the sample unit and the types of information sought. The presence of carbonized plant remains, as well as the probable occurrence of small glass trade beads, necessitates the use of as small a screen as possible for at least certain samples. Since we are not certain where such material may occur, field experimentation and experience will have to dictate a program of screen size use. In general, 3.2-6.4 mm mesh should be used for dry screening and 1 mm mesh for water screening.

Flotation samples should be taken from each cultural stratum, feature, and excavation unit level. These samples will be used for quantitative evaluation of faunal and floral elements present, to evaluate the subsistence ecology of the Caddo V occupants, and particularly to evaluate the relative reliance on wild plant food use, compared to cultivated food sources. Special attention should be placed on the recovery of corncob fragments, if present, in order to determine the varieties grown or used. During the collection and flotation process a known quantity of charred poppy seed (Papaver somnifer) should be added to select samples in order to evaluate the processing reliability (cf. Kaplan and Maina 1977; Pendleton 1979; Wagner 1979).

A series of sorting and processing screens should be set up near the excavation units, and water for water screening provided from the river by a gasoline-powered pump. Material from each analytic unit should be bagged and tagged separately and removed to the analytic lab for processing.

Although a continuous feedback of laboratory analysis information should flow to the field to design and modify ongoing field excavations, this can only be effective on a project if sufficient field time is available. We propose that a processing laboratory be established near the project area and that all excavated materials be cleaned, marked, and rough sorted immediately upon removal from the field. If field time is too constrained to allow full input of all data classes, at a minimum the ceramics from each units should be examined to make sure that the material being collected relates to the Caddo V occupation. At least this level of chronologic control must be maintained by ongoing laboratory analyses of the collections. If, however, the

field schedule allows for the parallel analysis of all collections (ceramics, lithics, bone artifacts, etc.) simultaneously with the excavations, we propose that this be done so that the excavation strategy is influenced by all possible information.

Excavation Techniques

The judicious use of backhoe and shovel will allow the excavations to proceed at a reasonable pace. The backhoe should be used to strip the overburden from large areas, down to the midden level. This exposed surface should then be shovel scraped and any features flagged and plotted. Depending on the density of features, a block strategy can then be developed to balance the feature excavations with some controlled unit excavations in the midden levels.

In undifferentiated midden the provenience of material removed from these block areas should be recorded within an overall grid system, with spatial location controlled to an area no larger than 1 x 1 m. Culturally discrete analytic units, such at pit features, house floors, grave pits, distinctive artifacts or artifact clusters, postmolds, etc., should be recorded as separate provenience units. Careful spatial control is important to address problems of intrasite settlement analysis; therefore rigid vertical and horizontal controls must be maintained. On the other hand, large areas must be exposed at one time to observe the interrelationship of the internal elements of the site. The proper balance must be maintained between speed and efficiency of recovery, and precise observations and measurements. The spatial interrelationship of features at Cedar Grove is critical since the Soule photographs and the Teran map allow us to test hypothesized functional variation within a contemporaneous occupation area.

Attention must be given to collecting samples for radiocarbon assays. Archeomagnetic samples should be collected from any baked clay featues (hearths, floors, etc.). All carbonized logs must be collected for possible tree-ring dating. Techniques appropriate to collecting tree-ring samples (including preservation techniques) must be employed. The recovery of precise and chronologically sensitive information is critical for the mitigation of 3LA97 since we are dealing, presumably,

with a culturally discrete and temporally narrow period of occupation.

Aboriginal skeletal remains most likely will be encountered during the excavations. Excavations of such human remains should be conducted in consultation with a bioanthropologist. Where indicated, soil samples should be taken from within the thoracic cavity and the burial pit for potential biological or cultural information. If mortuary vessels are present, their contents should be preserved and analyzed.

Analytic Procedures and Requirements

Several classes of cultural and physical data will be recovered by the excavation and recovery techniques discussed above. The following topics (geomorphology, lithic analysis, ceramic analysis, bioanthropology, and faunal and floral analyses) are major research areas to be investigated by appropriate analytic scientists subsequent to the field investigations. However, the size and type of the data sample must be determined by consultation in advance between these ancillary scientists and the project archeologist so that appropriate collection techniques and controls can be employed.

Geomorphology

Recovery of detailed geomorphological data concerning the depositional processes which formed the paleosurfaces of the Cedar Grove site is critical in understanding its former environmental setting. Soil samples for mechanical and chemical analyses must be collected. Soil profiles must be recorded for analysis by a geomorphologist. Investigations into the relationship of the site location to the earlier Red River channels, as discussed in Chapter 3, should be continued, and data recovered from subsequent excavations applied to Hemmings's model. Reconstruction of the areal paleotopography, if possible, will have a significant bearing on any assessment of the subsistence and settlement ecology of the site's inhabitants.

Lithic analysis

Stone artifacts, debitage, and other lithic material should be classified and studied within an analytic framework structured to address certain research questions (cf. House 1975): (a) differences in lithic technologies and specific tool manufacturing processes should be studied; (b) intensity of utilization of raw materials and frequency of multiple uses and recycling can be investigated; (c) the presence of specialized tools displaying considerable effort in manufacture, implying long term use and curation, should be noted; (d) functional analysis of all stone tools should be carried out, studying morphological characteristics and edge-wear patterns; (e) the presence of exotic, decorative, or ceremonial material should be anticipated and an attempt made to identify the source of exotic raw materials. Trade network analyses can be undertaken if sufficient nonlocal materials are recovered from the site.

Ceramic analysis

The analysis of ceramic materials (pottery, daub, etc.) obtained should follow the procedures used in this report. Additional pottery types, or refinements of existing typologies, may be proposed as sample size increases.

Bioanthropology

If aboriginal burials are encountered at the site, either as isolated graves or in a formal cemetery, the utmost care should be taken to excavate these remains with an appropriate degree of respect and to make sure that the data recovered is scientifically worthwhile. As warranted by sample size, the following research topics can be addressed (Rose and Owen 1979).

a. Paleodemography: analyses to determine sex and age of the individuals and to develop a population profile. These data can be used to determine the sample representativeness and to test whether excavation strategies have located all possible burial practices (Cook 1974).

b. Paleoepidemiology: investigations focusing on skeletal pathologies, dental pathologies, dental attrition, stress indicators (such as retarded skeletal growth, Harris lines, enamel hypoplasia, Wilson bands, fluxuating dental assymetry, and the like).

c. Dietary reconstruction: two basic analytic approaches should be considered: trace element analysis (cf. Gilbert 1977) and carbon isotope analysis (DeNiro and Epstein 1978).

These recommended approaches can be jointly employed to evaluate the biological quality of prehistoric cultural adaptations, and to investigate the biological impact of the stresses caused by Euramerican pressures, and the effect of warfare with other Native American groups. If further investigations support our chronological placement of Cedar Grove as a critical contact period site, this biological evidence may have even greater scientific value as it would document the disintegration of both age-old cultural patterns and biological processes.

Floral and faunal analyses

The data represented by preserved animal bone, fish scales, carbonized or otherwise preserved plant remains, and other indicators of the past environment should be collected, sorted, identified, and classified typologically by qualified personnel trained in paleobotany and paleozoology. In addition to analyses of the preserved remains, impressions of plant remains in the daub should also be studied.

The recovery and identification of these elements, however, is not the analytic objective, nor would such a limited end result constitute adequate use of the data for mitigation purposes. These paleoenvironmental data must be articulated with the interpretation of other classes of data from the site. Such analyses take time, and the integration of these results with the results of the other technical studies take even longer. No matter how limited field time might be due to the need to complete the revetment construction, the contract period for data analysis and report writing must be sufficiently long to allow for the various collaborating scientists to pool their knowledge and produce a truly interdisciplinary report on the site excavations.

The actual analysis of the floral and faunal collections are time consuming, and specialists trained to conduct such studies are not plentiful. The length of time required for the completion of the report will be determined by the quantity and variety of material recovered, as well as the availability of specialists able to analyze and interpret it.

The Cedar Grove site presents an unparalleled opportunity to investigate the intrasite characteristics of a protohistoric Caddo compound. The settlement model developed from the Soule and Teran sources can be tested at 3LA97. Chapter 7 further details the important research questions to be addressed by the mitigation.

Recommended Plan of Excavation

Figure 40 shows the distribution of heavy midden and lighter density artifact areas extrapolated from the results of the testing phase. Based on this distribution the site area within the direct impact zone is ca 4,000 m^2. Portions of the site area have already been destroyed by revetment work to the east and in two areas north of the site. The western limits of the site have not been verified but are based on the relative intensity of materials recovered and the assumption that the paleosurface upon which the site is located expanded to the west. In the revetment right-of-way but outside the direct impact zone there are ca 13,000 m^2. The site apparently extends beyond the limits of the right-of-way.

We recommend that the data recovery program be structured in four stages. The first stage would involve the hand excavation of 20% of the site area in the direct impact zone. Based on the testing results, about 20 cm of midden can be expected and we anticipate features extending below the midden. The 20% sample should be distributed in such a way as to explore the diversity of the site's surface. If submidden features are common then a second stage should commence. At this time the backhoe should be used to remove the remaining midden to a point just above the level at which features can be defined. The final few centimeters of midden can be

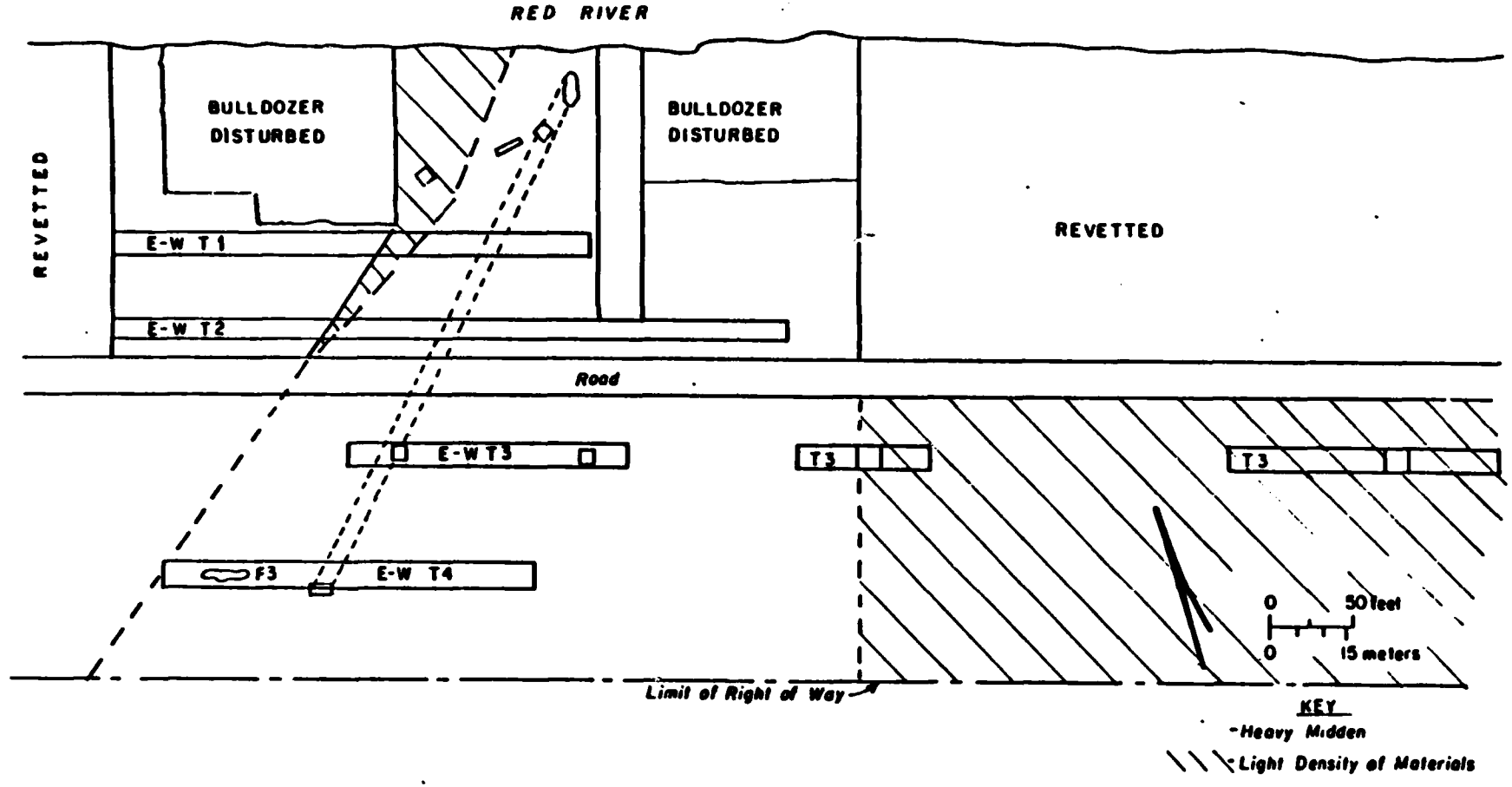


Figure 40

Areas of 3LA97 requiring mitigation

removed by shovel scraping and the features mapped and excavated. All feature fill should be wet screened with flotation samples recovered. On a regular basis, midden removed by the backhoe should be transported to the water screen to be processed, increasing the sample. The 20% hand excavation will total about 2% of the known site. The extent of backhoe-assisted feature excavation will be dependent on feature density and complexity. Superimpositions, for example, will require careful evaluation and excavation because of the extremely valuable relative dating information.

Limited excavation outside of the direct impact zone but within the revetment right-of-way should focus on the excavation of an area around Feature 3 and any other features which extend from the direct impact zone into the right-of-way. Feature 3 is evidently a Caddoan house and information from the configuration of the structure and its relationship to other structures will yield valuable information for planning the ongoing excavation as well as essential data on intersite patterning. The size of the excavation unit(s) will, of course, be dependent on the feature's characteristics. We recommend that an area excavation of ca 20 x 20 m be used for determining the appropriate work effort for Feature 3.

In sum, we recommend that ca 800 m^2 of the site's area within the direct impact zone be hand-excavated after machine removal of the overburden. This work would be followed by machine removal of all remaining overburden and midden with hand excavation of exposed features. Limited but essential excavations (400 m^2) are also recommended outside the direct impact zone within the right-of-way. Early in the fieldwork, the backhoe should be used to test for deeply buried deposits. These mitigation recommendations have been based on the assumption that no deeply buried deposits will be found. Should they be present the proposed recommendations may require revision.

About 1,000 mandays of effort should achieve the above levels of intensity. This level was determined assuming that hand excavation could proceed at the rate of about 2 m^2 of surface area per manday. Stated otherwise, we have assumed two crew persons could excavate an average of 20 cm of midden and map and excavate all features in a 2 x 2 m unit each day. Thus hand excavation of 1,200 m^2 would require 600 mandays. Excavation following the backhoe stripping of midden plus

mapping and water screening would require another 400 mandays. Such a level of effort could be achieved by a staffing level of 25 field crew for two months (40 workdays). The fieldwork should be directly supervised by an experienced Ph.D. level archeologist meeting the Society of Professional Archeologists' qualifications for such work. Three crew leaders would be required for direct crew supervision. In order to maintain control of the excavation strategy a laboratory crew under the direction of an experienced laboratory director is required.

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Appendix A

ANALYSIS OF MATERIAL FROM 3LA128 ANOTHER RECENTLY DISCOVERERD SITE AT THE FIELD REVETMENT

by Frank F. Schambach and John E. Miller

During the test excavation project at the Cedar Grove site, John Miller discovered another site nearby. It had already been disturbed by revetment construction. Material from 3LA128 was collected and taken to the Arkansas Archeological Survey station at Southern Arkansas University in Magnolia where it was cleaned and processed. Identifications are provided on the following pages. Since work was not authorized at this site, and no funds were available to conduct any test excavations, our knowledge of the site is limited to the collections reported here.

At this time we do not know the extent of the damage caused to the site and therefore do not know if it is eligible for nomination to the National Register of Historic Places. Since the collections indicate that material from earlier cultural periods occur here, information would be available that could not be obtained from the proposed excavations of 3LA97. The Arkansas Archeological Survey recommends that limited testing be carried out at 3LA128 in order to determine its significance in terms of National Register criteria.

THE CERAMICS FROM 3LA128

The coarse ware types Bossier Brushed, Sinner Linear Punctated, Cowhide Stamped and Foster Trailed-Incised indicate a Caddo II to Caddo III period occupation for this site. The untyped incised and punctated-incised sherds support this interpretation, as does the high incidence of grit and bone tempering as compared to shell tempering.

The rather large sample of plain grog- or bone-tempered rims, body and base sherds indicate a possible second, earlier occupation at about the very late Fourche Maline to Caddo I time level. The fingernail punctated sherds would fit in here quite nicely, as would the single red filmed rim. A component at this time level would be of unusual interest because we have no habitation sites of the Caddo I period in the Great Bend region, although there are several ceremonial centers such as Crenshaw and Bowman.

The very few shell-tempered sherds suggest a very light Caddo IV or Caddo V occupation. We do not have enough control over ceramics in the Great Bend region to be certain that shell temper was not introduced in small quantities in Caddo III times, but that seems unlikely.

3LA128 HISTORIC ARTIFACTS-#80-623

6 pieces of glass
1 bottle neck
2 pieces of white pearl ware
3 pieces of concrete
5 large rusted pieces of metal
47 pieces of thin burned metal
20 wire nails of various sizes
4 pieces of wire
121 pieces of slag

Comment: None of the artifacts here appear to be very early--the bottle neck has mold marks all the way up the neck and the nails are all round wire nails. The slag probably relates to some kind of boiler operation.

3LA128 LITHICS-#80-623

86 chert flakes
2 novaculite flakes
22 utilized chert flakes
1 utilized novaculite flake
56 irregularly broken chert chunks and cobbles (includes cores)
1 chert arrow point
1 novaculite arrow point fragment
1 unfinished chert arrow point
3 chert biface fragments--all small
20 unmodified cobbles
1 quartzite cobbles used as a hammerstone
3 pieces of quartzite
21 sandstone chunks
1 probable sandstone boatstone fragment

Comment: All material is probably local and obtained from sand and gravel bars in the Red River channel--even the novaculite was probably picked up on these bars. One of the flakes exhibits a waterworn cortex. Apparently most chert cobbles were being broken for the quick manufacture of a cutting edge.

3LA128 FAUNAL MATERIAL-#80-623

8 pieces of bone
1 piece of shell
1 probable deer tooth fragment

Comment: All bone appears to be animal bone, one piece exhibiting butcher marks. This may be related to the historic component. One piece belongs to a fish, probably a drum. Four pieces are burned. Besides the fish bone all others appear to be long bone fragments of fairly large animals.

3LA128 FLORAL MATERIAL-#80-623

2 pieces of charred corncobs

Comment: Probably related to the prehistoric component at the site.

3LA128 FIRED CLAY-#80-623

12 pieces of fired clay

2 fired clay objects

Comment: Fired clay probably relates to prehistoric structures. Pieces are rather small, and none have good grass or cane impressions. The clay objects are simply irregularly shaped globs of fired clay, possibly byproducts of pottery making.

ARKANSAS ARCHEOLOGICAL SURVEY
PHOTOGRAPH NEGATIVE NUMBERS
USED IN THE CEDAR GROVE TESTING REPORT

Figure Number

7--804652
8--804674
9--804688
16--804660
17--804663
18--804697
21--804708
24--804979
26--804691
27--804713
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29c--804978
29d--804977
30a-b--804981
30c,g-h--804977
30d-f--804978
31a-b--804976
31c--804976
31d-g--804971
32a-d--804971
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33a-b,g--804976
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